ARITHMETIC

3

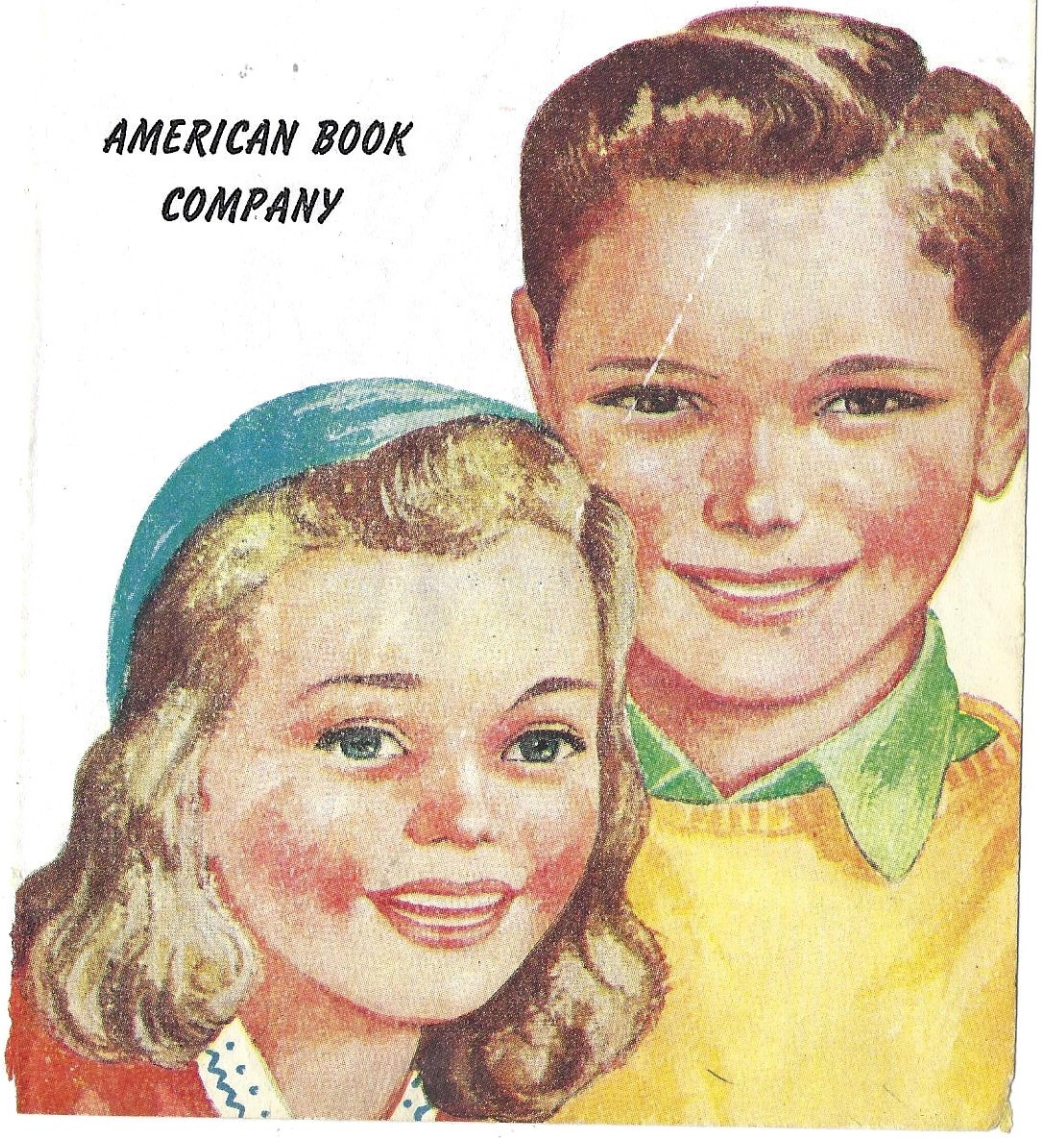
First Half of This Book

Clifford B. Upton

ARITHMETIC

Grade Three

AMERICAN BOOK COMPANY



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E. P. 8

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Introduction

The meaning theory of teaching arithmetic is the philosophy underlying the writing of these books. According to this theory, arithmetic should be so taught that the pupils understand it. This means clear and simple explanations of the fundamental processes of arithmetic, it means emphasis upon basic principles and concepts rather than the mechanical following of rules, it means an understanding of our number system, it means motivation of all new processes and topics by problems relating to children's interests, it means a wealth of problems and projects, and finally it means enough exercises on each topic so that the pupils can compute and solve problems with ease and comfort instead of struggling through a solution due to lack of sufficient practice. All these phases of the meaning theory are constantly applied throughout this series of arithmetics.

The work on problem solving, as developed in these books, incorporates the results of recent researches on this subject. These researches have shown that one-step arithmetic problems can be classified into a limited number of thought patterns representing all the types of quantitative thought and language that are possible in connection with each of the four fundamental operations. The problems given in ARITHMETIC, GRADE THREE, are limited to one-step problems and include all the thought patterns that are suitable for this grade. Many helps on problem solving are also included to guide the pupil and to acquaint him with the nature of the fundamental processes. This new

treatment of problem solving assures an adequate repetition of each type of problem and avoids a neglect of certain types which has often occurred in the teaching of arithmetic.

Number relationships are featured in this book and are used to help the pupil learn the basic number facts more quickly and thoroughly than heretofore. For example, the fundamental addition facts are developed by the relationship method, a few addition facts well learned being the key to the learning of all the rest of these facts. Similarly, the subtraction facts are learned by relating them to the addition facts instead of memorizing them as independent items. In like manner, the division facts are quickly obtained from the multiplication facts by a simple process of relationship. This new approach to the learning of the number facts results in a great economy in time and effort.

The explanations of fundamental processes are given in simple language that third grade children can understand. Great care has been taken to avoid overexplanation and the confusion that it causes.

The vocabulary has been carefully selected and contains an unusually high percentage of words recognized in authoritative word lists as suitable for the third grade and below.

The work on common measures involving the foot, quart, pound, and hour is distributed throughout the book on progressively higher levels, instead of being concentrated in one or two places. This affords many practical applications of arithmetic related to children's interests.

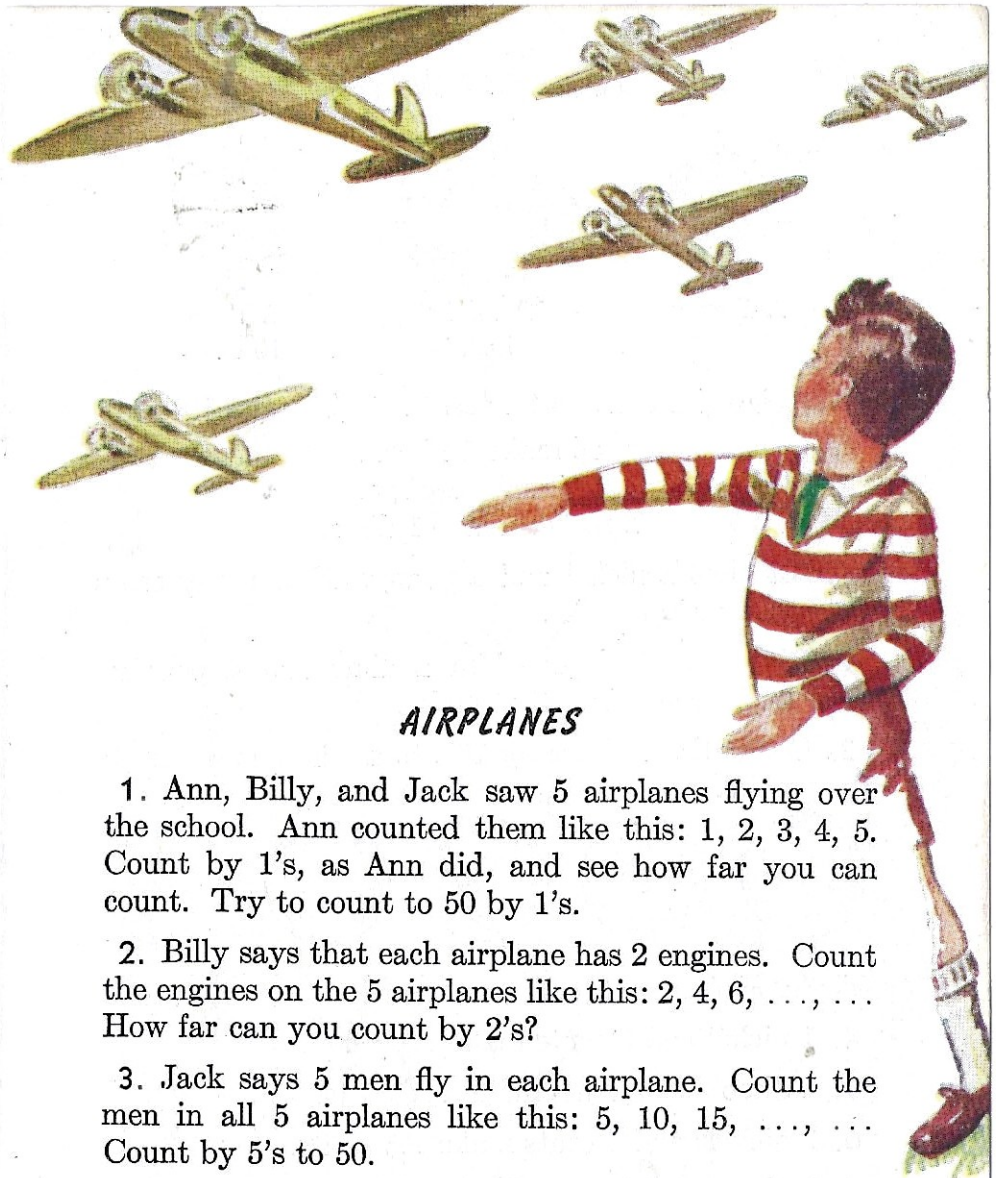
In the exercises on the four fundamental operations, as given in ARITHMETIC, GRADE THREE, the numbers with which the pupil works are limited to three figures. In addition and subtraction, carrying and borrowing are delayed until the pupil has become very proficient in working exercises that do not require these skills. The multiplication and division facts are given through the 4's. The work in multiplication is restricted to one-figure multipliers with single carrying while that in division is confined to even division without carrying. Checking is carefully taught, the methods used being those of the business and industrial world.

To assure adequate learning and provision for individual differences, this book contains an unusually large number of carefully graded exercises and problems. The pupils' progress is frequently checked by reviews, summaries, and problem tests. There is also a comprehensive program of diagnostic tests, covering the four processes, with keyed references to remedial exercises.

The author wishes to acknowledge his indebtedness to Dr. Ethel Sutherland, to Miss Margaret Uhlinger, and to Mrs. Siegried M. Upton for their many valuable contributions to this book.

CHAPTER ONE

Using What You Know about Numbers



AIRPLANES

1. Ann, Billy, and Jack saw 5 airplanes flying over the school. Ann counted them like this: 1, 2, 3, 4, 5. Count by 1's, as Ann did, and see how far you can count. Try to count to 50 by 1's.

2. Billy says that each airplane has 2 engines. Count the engines on the 5 airplanes like this: 2, 4, 6, . . ., . . . How far can you count by 2's?

3. Jack says 5 men fly in each airplane. Count the men in all 5 airplanes like this: 5, 10, 15, . . ., . . . Count by 5's to 50.

4. Large airplanes have 10 men in them. Count by 10's to see how many men there are in 5 airplanes.

5. Count by 1's to 100. Count by 2's to 100. Count by 5's to 100. Count by 10's to 100.

A Penny
1 cent

A Nickel
5 cents

A Dime
10 cents

The sign ¢ means *cent* or *cents*. 10¢ means 10 cents.

5¢ make 1 nickel.
10¢ make 1 dime.
2 nickels make 1 dime.

1. Ann has a nickel and a penny. How many cents does that make?

2. Billy's mother gave him a dime and 4 pennies. How many cents does that make?

3. Count these dimes by 10's to see how many cents they make.

Tell what number goes in each space:

4. 1 nickel and 3 cents make . . . cents.
5. 1 dime and 7 cents make . . . cents.
6. 2 nickels and 3 cents make . . . cents.
7. 2 dimes and 1 cent make . . . cents.
8. 2 nickels make . . . cents. 2 dimes make . . . cents.

To THE TEACHER. Caution pupils never to write in their books to fill in blank spaces.

1. Two dimes and 3 cents make how many cents?

10¢ 10¢ 1¢ 1¢ 1¢

How many cents are 20¢ and 3¢?

2. Two dimes may be called 2 *tens;* 3 cents may be called 3 *ones*. Then 2 *tens* and 3 *ones* are 23. In the same way 4 *tens* and 6 *ones* are 46. What do 5 *tens* and 2 *ones* make?

Tell what number goes in each space:

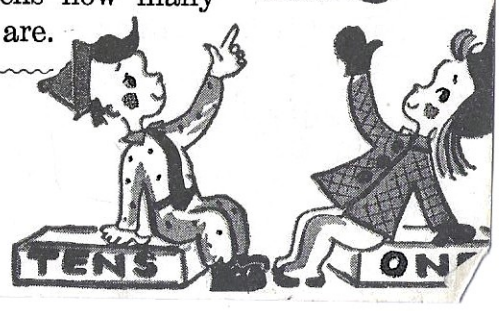
3. 6 tens make . . . 6 tens and 5 ones make . . .
4. 9 tens make . . . 9 tens and 7 ones make . . .
5. 7 ones make . . . 4 tens and 7 ones make . . .
6. 8 ones make . . . 3 tens and 8 ones make . . .
7. 1 ten makes . . . 1 ten and 1 one make . . .

8. How many tens and ones are there in 36? in 80? in 68? in 50? in 93? in 85? in 77? in 60?

9. In 53, which figure tells how many *tens* there are? Which figure tells how many *ones* there are?

In a two-figure number, the left-hand figure tells how many *tens* there are; the right-hand figure tells how many *ones* there are.

23



Meaning of two-figure numbers.

SHOOT THE ARROW

Billy and his friends are shooting arrows. Each child has 2 arrows.

1. Billy hits 5 with one arrow and 2 with the other arrow. His score is 5 and 2. Jack says Billy's score is 7. Is this right?

$$\begin{array}{r} 5 \\ \underline{2} \\ 7 \end{array}$$

2. Jack hits 5 with one arrow. He hits a line with the other arrow. When an arrow hits a line, it counts 1. What is Jack's score?

3. Betty hits a line with both arrows. What score does Betty have?

Find each child's score:

4.	1	4	2	6	4	2	3	2	4
	5	1	5	3	2	6	3	1	5
5.	4	3	6	3	1	6	5	1	5
	6	1	2	4	4	1	4	3	2
6.	5	3	4	3	5	1	2	6	4
	5	6	5	2	3	1	4	4	3
7.	3	1	4	2	5	1	2	4	6
	5	6	3	2	1	2	3	4	3

ADDING NUMBERS

When you find that 2 and 5 are 7, you are adding 2 and 5. 7 is called the *sum*.

$$\begin{array}{r} 5 \\ 2 \\ \hline 7 \end{array}$$

A new way to write "2 and 5 are 7" is like this:

$$2 + 5 = 7$$

+ means *and* or *plus*.
= means *are* or *equals*.

The sign + tells you to add.

Tell the sums of these numbers:

1. 2 + 8 =	1 + 8 =	3 + 1 =	5 + 5 =
2. 3 + 6 =	4 + 4 =	4 + 3 =	6 + 4 =
3. 2 + 2 =	2 + 7 =	8 + 1 =	9 + 1 =
4. 3 + 4 =	8 + 2 =	1 + 1 =	5 + 3 =
5. 7 + 2 =	4 + 5 =	6 + 1 =	2 + 6 =
6. 3 + 5 =	2 + 4 =	7 + 3 =	4 + 6 =
7. 1 + 9 =	6 + 2 =	5 + 2 =	6 + 3 =
8. 4 + 2 =	1 + 5 =	3 + 3 =	5 + 4 =
9. 2 + 1 =	3 + 7 =	7 + 1 =	2 + 5 =

10. How many are 3 balls and 4 balls? How many are 3 and 4?

11. How many are 3 dogs and 2 dogs? How many are 3 and 2? What does 3 + 2 mean?

12. What is the sum of 3 cents and 6 cents? What is the sum of 3 and 6? of 5 and 4? of 2 and 4?

13. Peter bought 5 yellow marbles and 5 blue marbles. How many marbles did Peter buy?

1. Ann has 4 cents. Billy has 4 cents. How many cents have they in all?

2. Tom has 2 apples. Jack has 3 apples. How many apples have the two boys?

3. Mary saw 5 birds in one tree and 4 birds in another tree. How many birds did Mary see?

4. Ann has 3 dolls. Mary has 2 dolls. How many dolls have the girls together?

5. Jack had 4 pennies and his father gave him 6 pennies. How many pennies did Jack have then? How many nickels can he get for these pennies?

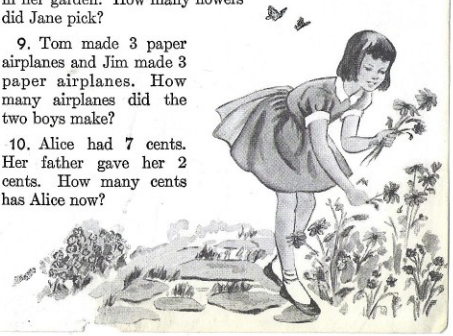
6. Jim saw 5 airplanes flying and 3 airplanes on the field. How many airplanes did Jim see?

7. Alice had 3 pencils. Today she bought 1 new pencil. How many pencils has Alice now?

8. Jane picked 4 yellow flowers and 3 blue flowers in her garden. How many flowers did Jane pick?

9. Tom made 3 paper airplanes and Jim made 3 paper airplanes. How many airplanes did the two boys make?

10. Alice had 7 cents. Her father gave her 2 cents. How many cents has Alice now?



Betty and Bob are throwing beanbags. Each one has 2 bags. If a bag falls into a hole, the number above the hole tells how much it counts. If the bag falls on the floor, it counts *zero*. Zero means *not any* or *nothing*. Zero is written like this: 0.

1. Betty throws one bag into hole 5. The second bag falls on the floor; this counts 0. Her score is 5 because 5 and 0 are 5.

$$\begin{array}{r} 5 \\ \underline{0} \\ 5 \end{array}$$

2. Bob's first bag falls on the floor. This counts 0. His second bag goes into hole 9. What is Bob's score? How many are 0 and 9?

$$\begin{array}{r} 0 \\ \underline{9} \end{array}$$

3. Betty tries again. Her first bag falls on the floor. Her second bag also falls on the floor. Her score is 0 + 0. How many is that?

$$\begin{array}{r} 0 \\ \underline{0} \end{array}$$

4. Bob throws again. His first bag falls into hole 7. His second bag falls on the floor. How many are 7 and 0? How many are 0 and 7?

$$\begin{array}{r} 7 \\ \underline{0} \end{array}$$

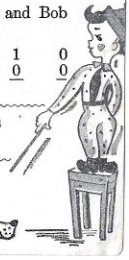
5. Betty throws again. Both bags fall into hole 3. What is Betty's score this time?

6. Bob throws his first bag into hole 5 and the other bag into hole 1. What is his score?

7. Here are some other scores that Betty and Bob made. Add them:

$$\begin{array}{ccccccccc} 0 & 3 & 5 & 0 & 9 & 0 & 7 & 1 & 0 \\ \underline{5} & \underline{0} & \underline{3} & \underline{7} & \underline{0} & \underline{3} & \underline{1} & \underline{0} & \underline{0} \end{array}$$

If you add a number and zero, the sum is the same as the number itself.



1. The addition facts $3 + 5$ and $5 + 3$ make a pair of facts. The numbers in $5 + 3$ are just like those in $3 + 5$; but they are *turned around*. You see that $3 + 5$ and $5 + 3$ both have the same sum, which is 8.

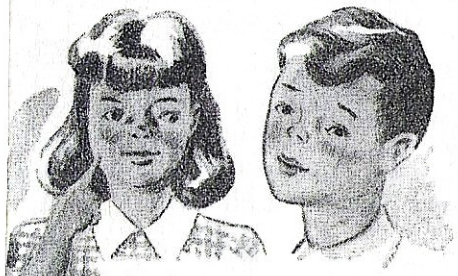
$$\begin{array}{r} 5 \\ 3 \\ \hline 8 \end{array} \qquad \begin{array}{r} 3 \\ 5 \\ \hline 8 \end{array}$$

> If two numbers are turned around, their sum is still the same.

2. Tom forgets the sum of 2 and 6. He turns the numbers around and gets 6 and 2. He knows that 6 and 2 are 8. This tells him that 2 and 6 are 8.

$$\begin{array}{r} 6 \\ 2 \\ \hline \end{array} \qquad \begin{array}{r} 2 \\ 6 \\ \hline 8 \end{array}$$

3. Betty forgets the sum of 3 and 7. She turns the numbers around and gets 7 and 3. She says, "7 and 3 are 10, so 3 and 7 are 10."



4. What does Betty do if she forgets 2 and 3? if she forgets 1 and 7?

5. Tell what to do if you forget the sum of 2 and 8.

Suppose you forget the sum of the numbers in each fact below. Turn the numbers around and then try to add them:

6.	$2 + 5$	$3 + 6$	$2 + 4$	$3 + 4$	$5 + 1$
7.	$4 + 6$	$2 + 7$	$4 + 5$	$2 + 8$	$2 + 6$

> If you forget an addition fact, turn the numbers around. Then try to add them.

Try to say all the answers without a mistake:

1.	3	4	3	0	1	0	2	6
	4	6	7	7	9	1	5	0
2.	6	3	0	1	8	3	9	2
	4	1	4	2	1	5	0	1
3.	0	5	4	1	6	1	8	4
	8	5	0	0	1	1	2	2
4.	3	4	5	7	5	1	5	0
	0	3	1	1	2	6	0	2
5.	6	7	4	5	0	2	2	7
	3	2	5	3	9	6	0	3
6.	5	4	2	2	4	6	9	1
	4	4	2	8	1	2	1	3
7.	0	2	1	0	3	3	8	1
	6	4	5	5	6	3	0	7
8.	0	3	2	7	2	1	0	1
	0	2	7	0	3	8	3	4

To the Teacher. The 64 addition facts given above represent all the addition facts with sums up to 10. These 64 facts, together with the 36 addition facts with sums above 10, make up the 100 addition facts on page 73. The addition, subtraction, multiplication, and division facts on pages 11, 27, 73, 74, 276, and 277 are the basic facts that are used repeatedly in the computational skills taught in Grade 3; these facts should be so thoroughly mastered by the pupil that he can give all the answers quickly and accurately. Each page of facts serves as a diagnostic test which is to be administered orally to each pupil. As the pupil reads the facts on a given test he gives *only the answers;* he should not say "3 and 4 are 7." For further suggestions concerning these tests, see page 27.

1. Count by 10's from 40 to 130.

2. Count by 5's from 25 to 80.

3. Count by 2's from 20 to 50; from 60 to 90.

4. Count by 2's from 1 to 41, like this: 1, 3, 5, 7, 9, . . ., . . ., . . ., and so on.

5. Tell the numbers that come between 32 and 38; between 86 and 92; between 45 and 51.

6. Tell the names of three things you see in the picture on page 93 of this book.

7. Tell the first number that comes *after* each of these numbers: 17, 35, 29, 81, 42, 58, 73, 94, 66, 70, 14.

8. Tell the number that comes just *before* each of these numbers: 12, 39, 50, 71, 95, 63, 44, 82, 48, 16.

Tell which one of the three numbers is the largest:

9. 25, 18, 72	60, 59, 31	14, 36, 25
10. 28, 82, 41	12, 19, 13	71, 51, 91
11. 40, 29, 18	36, 86, 26	81, 87, 83

Tell which one of the three numbers is the smallest:

12. 42, 10, 19	73, 89, 76	62, 59, 93
13. 16, 81, 11	39, 33, 37	17, 38, 27
14. 57, 72, 27	40, 90, 30	38, 82, 18

15. Tell some ways you use numbers when you are at home, when you are playing, and when you go to the store to buy things.

Nickel	Dime	Quarter	Half Dollar
5¢	10¢	25¢	50¢

25 cents make 1 quarter.
50 cents make 1 half dollar.
100 cents make 1 dollar.

The sign $ means *dollar* or *dollars*. $3 means 3 dollars.

1. How many 10's make 100? How many dimes make 100 cents or $1?

2. How many cents equal 2 dimes and 1 nickel?

3. How many dimes and nickels make 1 quarter? Give two different answers.

Tell what number should be put in each space:

4. A half dollar is the same as . . . ¢.

5. A half dollar is the same as . . . quarters.

6. A dollar is the same as . . . half dollars.

7. A half dollar equals . . . dimes.

8. 7 dimes and 1 nickel equal . . . cents.

9. 1 quarter and 1 dime equal . . . cents.

10. 1 half dollar and 2 dimes equal . . . cents.

11. 1 half dollar and 3 nickels equal . . . cents.

1. There are 23 boys and 25 girls in Ann's class at school. How many children are there in all?

To find the number of children, you add 23 and 25.

Write 25 under 23 and draw a line. You know that 23 means 2 *tens* and 3 *ones;* 25 means 2 *tens* and 5 *ones.*

First add the *ones,* like this: 5 *ones* and 3 *ones* are 8 *ones.* Write 8. Then add the *tens,* like this: 2 *tens* and 2 *tens* are 4 *tens.* Write 4. The sum is 48. There are 48 children in Ann's class.

$$\begin{array}{r} 23 \\ \underline{25} \\ 48 \end{array}$$

When you understand the work, you can do it like this:

Ones: Add 5 and 3, thinking "5, 8." Write 8.
Tens: Add 2 and 2, thinking "2, 4." Write 4.

2. There are 48 children in Ann's class and 41 children in Betty's class. How many children are there in the two classes?

Add these numbers:

3.	44	12	41	35	32	65	32	34
	35	86	24	32	67	24	23	31
4.	51	74	32	12	12	70	64	23
	37	24	54	32	51	19	13	40
5.	81	13	10	36	46	40	25	13
	12	64	12	13	21	50	63	54
6.	26	21	10	20	51	57	23	48
	12	58	40	57	13	42	36	40
7.	60	57	21	43	28	14	43	32
	30	21	76	55	21	22	41	27

Adding two-figure numbers without carrying.

1. Tom had 5 apples. He gave 2 apples to Mary. How many apples did Tom have left?

2. When you take 2 from 5, you write 2 under 5. The sign − is called the *minus* sign. It means *take away* or *subtract.* When you take 2 from 5 and find that 3 is left, you are subtracting.

$$\begin{array}{r} 5 \\ -\,2 \\ \hline 3 \end{array}$$

Another way to write this example is like this: 5 − 2 = 3. This is read "5 less 2 equals 3" or "2 from 5 is 3."

3. Mary has 4 apples. If she eats 1 apple, how many apples has she left?

$$\begin{array}{r} 4 \\ -\,1 \\ \hline \end{array}$$

4. Joe had 5 pennies. Then he lost 3 pennies. How many pennies did he have left?

$$\begin{array}{r} 5 \\ -\,3 \\ \hline \end{array}$$

5. Ann had 3 kittens. She gave 1 kitten to Mary. How many kittens has Ann left?

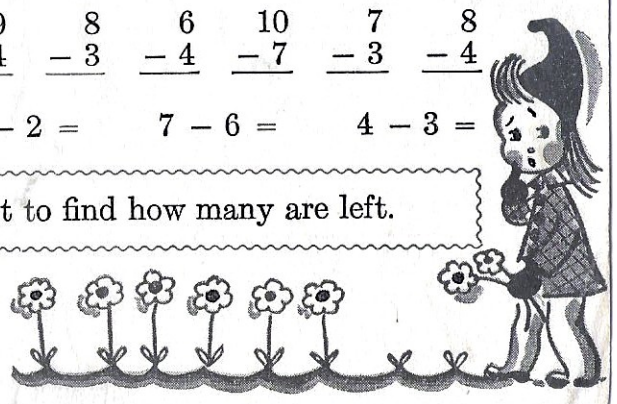
6. Jim had 4 rabbits. Today 2 rabbits ran away. How many rabbits has Jim left?

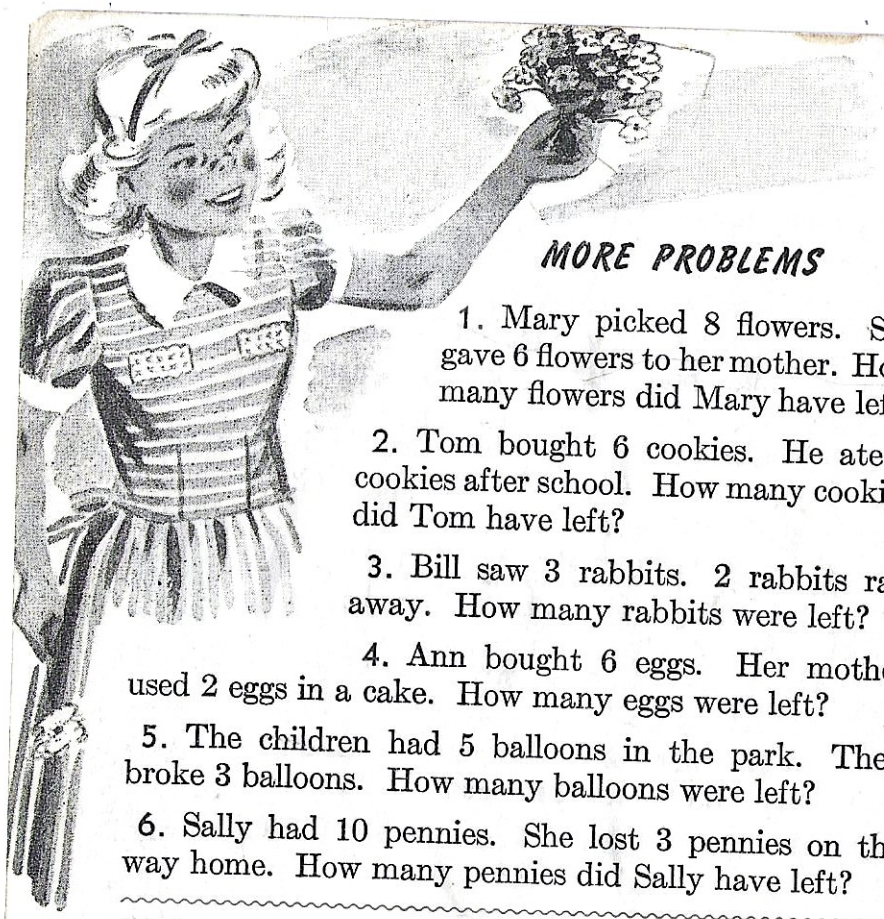
Subtract these numbers:

7.	5	3	2	9	3	10	8	6
	− 4	− 2	− 1	− 3	− 1	− 5	− 1	− 3
8.	7	5	9	8	6	10	7	8
	− 2	− 1	− 4	− 3	− 4	− 7	− 3	− 4

9. 4 − 2 = 6 − 2 = 7 − 6 = 4 − 3 =

You subtract to find how many are left.





MORE PROBLEMS

1. Mary picked 8 flowers. She gave 6 flowers to her mother. How many flowers did Mary have left?

2. Tom bought 6 cookies. He ate 2 cookies after school. How many cookies did Tom have left?

3. Bill saw 3 rabbits. 2 rabbits ran away. How many rabbits were left?

4. Ann bought 6 eggs. Her mother used 2 eggs in a cake. How many eggs were left?

5. The children had 5 balloons in the park. They broke 3 balloons. How many balloons were left?

6. Sally had 10 pennies. She lost 3 pennies on the way home. How many pennies did Sally have left?

Subtract these numbers:

7.	9 − 7	6 − 3	6 − 1	7 − 4	10 − 8	7 − 1	5 − 3	10 − 6
8.	4 − 3	9 − 2	8 − 4	3 − 2	10 − 4	8 − 1	7 − 5	10 − 1
9.	9 − 5	8 − 2	9 − 1	8 − 7	10 − 3	6 − 2	8 − 3	10 − 9
10.	5 − 4	9 − 8	8 − 5	8 − 6	10 − 2	6 − 5	9 − 6	10 − 5

1. Bob had 8 cents. He spent 8 cents for a toy. How many cents did he have left?

$$\begin{array}{r} 8 \\ -\ 8 \\ \hline 0 \end{array}$$

Bob spent all his money, so he had nothing left. 8 − 8 = 0.

2. Tom had 5 cents. He spent 5 cents for a big yellow lollipop. How many cents did he have left? What is 5 less 5?

$$\begin{array}{r} 5 \\ -\ 5 \\ \hline 0 \end{array}$$

If you subtract a number from itself, there is nothing left. The answer is 0.

3. Jane had 6 pennies. She did not spend any pennies. How many pennies did Jane have left? How many are 6 less 0?

$$\begin{array}{r} 6 \\ -\ 0 \\ \hline 6 \end{array}$$

If you take 0 from a number, the answer is the same as the number itself.

Tell how much is left:

4. Jane had 2 cakes and ate 2.
5. Tom had 6 apples and gave away 6.
6. Bob had 3 oranges and did not eat any.
7. Bill had 9 pennies and did not spend any.

Give the answers:

8.	4 − 0	2 − 0	6 − 6	6 − 0	1 − 1	7 − 7	1 − 0	5 − 5	8 − 0
9.	3 − 3	8 − 8	3 − 0	5 − 0	4 − 4	7 − 0	2 − 2	0 − 0	9 − 9

AT THE CANDY STORE

1. Jane had 6¢. Her mother gave her 4¢ more. How many cents did Jane have to spend for candy?

2. Jane bought 5 red candies and 3 green candies. How many candies did she buy all together?

3. Jane had 10¢. She spent 8¢ for candy. How many cents did she have left?

4. Bob spent 2¢ for a lollipop and 3¢ for nut candy. How many cents did Bob spend?

5. Bob had 8¢ to spend. He paid 5¢ for candy. How many cents did Bob have left?

6. Bill had 9¢. He lost 2¢ on the way to school. How many cents did Bill have left?

7. Bill spent 5¢ for a bag of candy and 2¢ for a lollipop. How many cents did he spend? Did Bill have any money left? See ex. 6.

8. Betty bought 4 nut candies and 5 pieces of chocolate. How many pieces of candy did she buy?

9. Betty ate 3 of her 5 pieces of chocolate. How many of them did she have left?

10. Peter bought 10 yellow candies. He ate 2 of them. How many did he have left?

11. Peter had 10¢. He spent 5¢ for candy. How many cents did he have left?

12. Ann bought a candy rabbit for 4¢ and a candy bird for 3¢. How many cents did Ann spend?

DO YOU ADD OR SUBTRACT?

In each problem, first tell whether you add or subtract to get the answer. Then work the problem:

1. Betty had 5¢. She bought an apple for 3¢. How much did she have left?

2. Bill had 3 white hens and 4 black hens. How many hens had Bill in all?

3. Tom had 8¢ in his pocket. He bought a red balloon for 8¢. How many cents had Tom left?

4. Jack's bank had no pennies in it. Today Jack put 6 pennies in his bank. How many pennies does he have in his bank now?

5. Peter has saved some money. He wants to buy 2 white rabbits and 1 black rabbit. How many rabbits in all does Peter want to buy?

6. Mary had 4 kittens. She gave Ann 1 of them. How many kittens did Mary have left?

7. Sally had 5 candies in a bag. She did not eat any of them. How many candies were left in the bag?

8. Nancy had 12 cents. Her father gave her 15 cents. How many cents had Nancy then?

9. Jim's mother gave him 5 cookies. He ate 1 of them. How many cookies did Jim have left?

10. Jack saw 3 robins in the garden. 1 robin flew away. How many robins were left in the garden?

11. Jane spent 10¢ for pencils and 28¢ for a book. How much did Jane spend all together?

12. Jack had 9¢. He spent 3¢ for an orange. How much did he have left?

CAN YOU DO THESE IN YOUR HEAD?

1. 3 dimes and 4 pennies equal how many cents?
2. How many dimes make a half dollar?
3. 74 means . . . tens and . . . ones.
4. 16 means . . . ten and . . . ones.
5. 80 means . . . tens and . . . ones.
6. Count by 2's to 50.
7. Jane invited 5 boys and 4 girls to her party. How many children in all were at the party? Don't forget to count Jane.
8. The 10 children wore paper hats at the party. There were 6 yellow hats. The rest of the hats were blue. How many blue hats were there?

Say the answers. Watch the signs:

9.	4 + 3	7 + 3	10 − 4	5 + 4	7 − 2	6 − 3	2 + 6	8 − 5
10.	5 − 4	5 + 2	10 − 8	4 − 1	3 + 5	6 + 4	9 − 2	1 + 6

11.	5 + 5	10 − 2	3 + 2	2 + 8	10 − 5
12.	7 − 6	6 + 3	8 − 6	7 − 7	7 + 2
13.	1 + 8	4 − 2	9 + 0	7 − 4	8 − 7
14.	3 − 2	6 − 2	4 − 3	3 + 6	0 + 8

1. A doll costs 10¢. Jane has 6¢. How many more cents does she need to buy a doll? 6 and how many are 10? 6 and . . . are 10.

2. A ball costs 8¢. Alice has 5¢. How many more cents does she need to buy the ball? 5 and how many are 8? 5 and . . . are 8.

3. Jim has 6¢. He wants to buy a toy dog for 9¢. How many more cents does he need to buy the toy dog? 6 and how many are 9? 6 and . . . are 9.

4. Peggy has 3¢. She wants to buy a doll's chair for 7¢. How many more cents does she need? 3 and how many are 7? 3 and . . . are 7.

5. Ann has 4¢. She wants to buy a balloon for 5¢. How many more cents does she need? 4 and how many are 5? 4 and . . . are 5.

6. A truck costs 10¢. Bob has 5¢. How many more cents does he need? 5 and how many are 10?

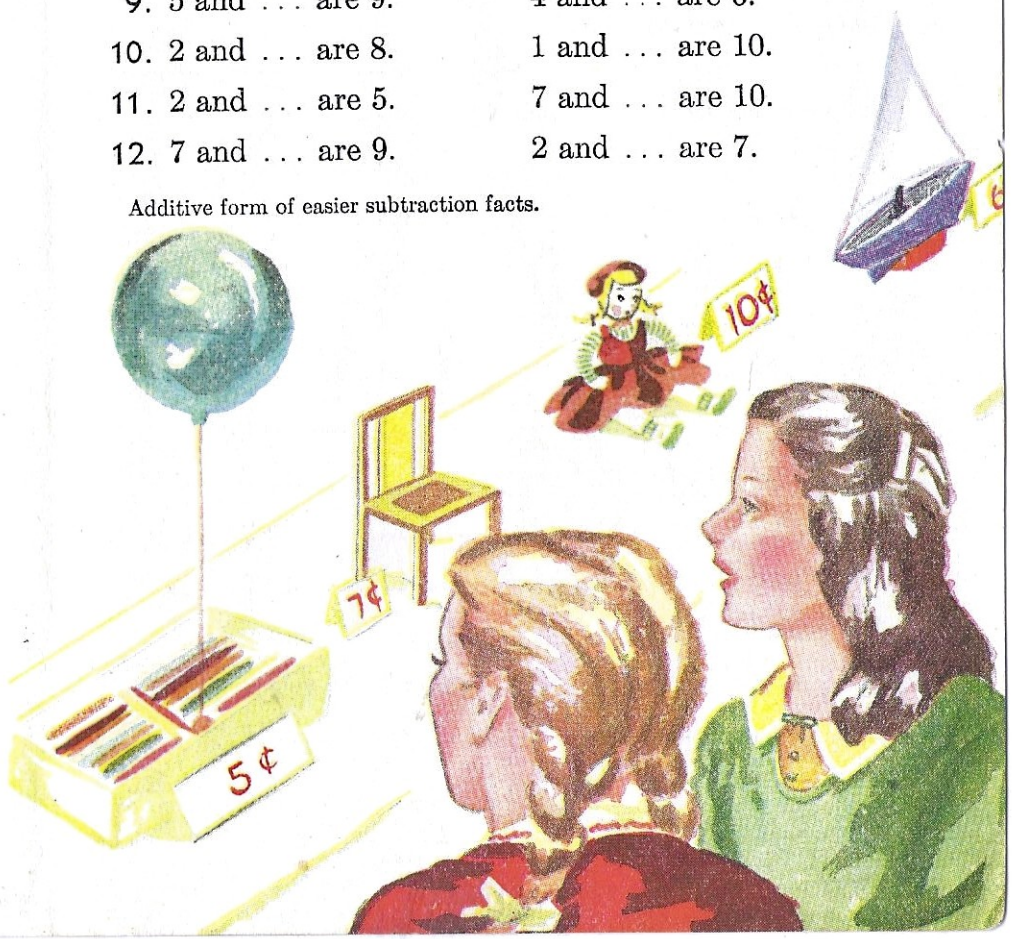
7. An airplane costs 10¢. Tom has 3¢. How many more cents does he need? 3 and how many are 10?

8. Dick has only 2¢ in his pocket. He wants to buy a boat for 6¢. How many more cents does he need? 2 and how many are 6?

Tell what number should be put in each space:

9. 5 and . . . are 9.	4 and . . . are 6.
10. 2 and . . . are 8.	1 and . . . are 10.
11. 2 and . . . are 5.	7 and . . . are 10.
12. 7 and . . . are 9.	2 and . . . are 7.

Additive form of easier subtraction facts.



HOW MANY MORE DO YOU NEED?

1. Betty wants 10 buttons on her new dress. Her mother has 4 buttons. How many more buttons does she need to buy?

2. Joe wants 6 stamps to put on letters he wrote. He has 2 stamps for the letters. How many more stamps does he need to buy?

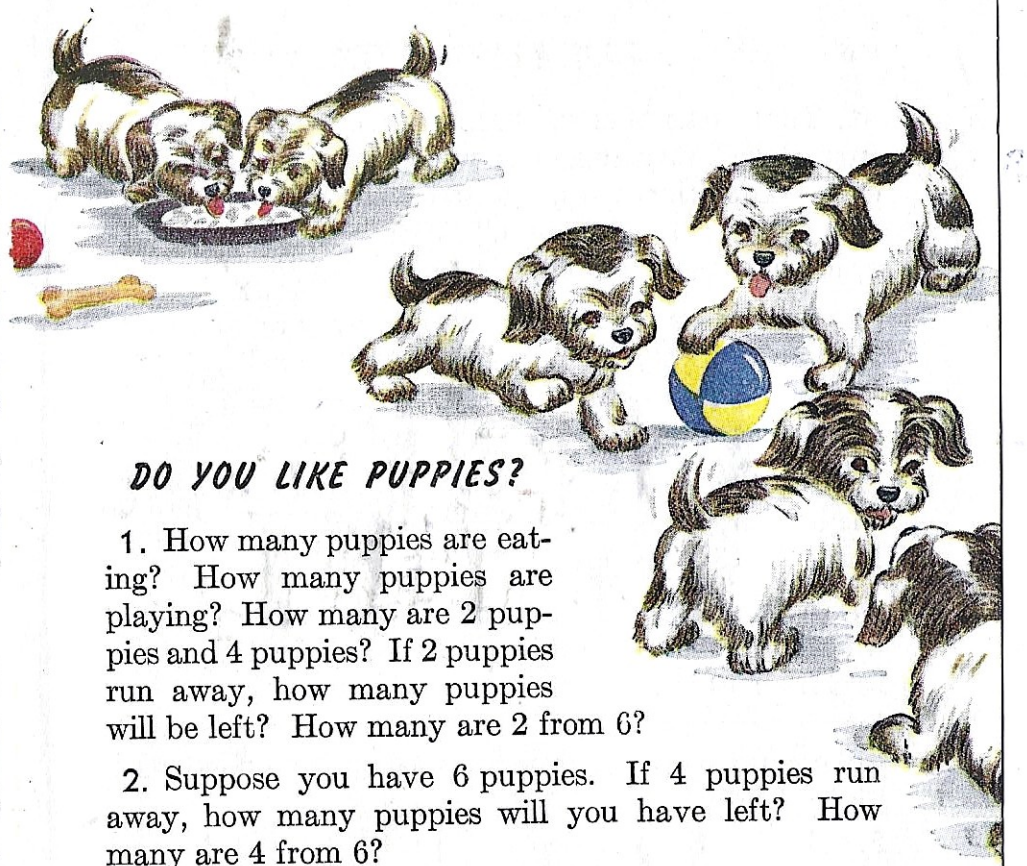
3. Jack told his mother he would pick 4 baskets of apples. This morning he picked 2 baskets. How many more baskets of apples does he need to pick?

4. Alice wants to make 5 dresses for her doll. She has made 3 dresses for it. How many more dresses does she need to make?

Tell what number should be put in each space:

5. 1 and . . . are 7.	5 and . . . are 7.
6. 3 and . . . are 9.	4 and . . . are 9.
7. 2 and . . . are 2.	3 and . . . are 6.
8. 3 and . . . are 8.	4 and . . . are 7.
9. 2 and . . . are 9.	8 and . . . are 9.
10. 6 and . . . are 8.	3 and . . . are 5.
11. 1 and . . . are 6.	5 and . . . are 6.
12. 4 and . . . are 8.	1 and . . . are 2.
13. 9 and . . . are 10.	4 and . . . are 4.
14. 8 and . . . are 10.	1 and . . . are 9.
15. 2 and . . . are 10.	3 and . . . are 3.

Additive form of easier subtraction facts.



DO YOU LIKE PUPPIES?

1. How many puppies are eating? How many puppies are playing? How many are 2 puppies and 4 puppies? If 2 puppies run away, how many puppies will be left? How many are 2 from 6?

2. Suppose you have 6 puppies. If 4 puppies run away, how many puppies will you have left? How many are 4 from 6?

3. You know that 4 and 2 are 6. This shows you that 2 from 6 is 4 and that 4 from 6 is 2. $4 + 2 = 6$ is an addition fact. $6 - 2 = 4$ and $6 - 4 = 2$ are subtraction facts. An addition fact helps you to make two subtraction facts.

4. How many are 4 and 5? How many are 4 from 9? How many are 5 from 9?

5. How many are 5 and 3? How many are 5 from 8? How many are 3 and 4? How many are 3 from 7?

6. 2 and 6 are . . ., so 2 from 8 is . . .

1. Tom asks Betty, "How many are 3 from 9?" Betty does not remember the answer. Tom then asks, "3 and what are 9?" Betty says, "3 and 6 are 9." Tom says, "You are right. 3 and 6 are 9, so 3 from 9 is 6."

$$\begin{array}{r} 9 \\ -\ 3 \\ \hline \end{array}$$

2. Tom asks Betty, "How many are 6 from 10?" Betty forgets again. So Tom asks, "6 and what are 10?" Betty says, "6 and 4 are 10." Tom says, "Then 6 from 10 is 4."

$$\begin{array}{r} 10 \\ -\ 6 \\ \hline \end{array}$$

3. How many are 3 from 7? If you forget the answer, think, "3 and what are 7?" You know that 3 and 4 are 7, so 3 from 7 is 4.

$$\begin{array}{r} 7 \\ -\ 3 \\ \hline \end{array}$$

4. If you forget a subtraction fact, such as 8 from 10, think like this: "8 and . . . are 10, so 8 from 10 is . . ."

$$\begin{array}{r} 10 \\ -\ 8 \\ \hline \end{array}$$

Subtract these numbers. If you forget the answer to a fact, study ex. 1 to 4 above:

5.	10 − 4	8 − 3	7 − 0	5 − 1	9 − 6	8 − 4	3 − 3	6 − 2
6.	10 − 5	5 − 4	9 − 2	4 − 4	6 − 4	7 − 5	9 − 1	9 − 7
7.	10 − 2	4 − 0	8 − 8	9 − 5	7 − 6	4 − 2	3 − 0	8 − 5
8.	10 − 7	7 − 4	8 − 6	6 − 3	9 − 4	7 − 3	5 − 2	8 − 7
9.	10 − 3	8 − 2	5 − 3	7 − 2	4 − 1	6 − 5	9 − 3	3 − 2

Try to say all the answers without a mistake. If you forget some of the answers, study page 26. Then try again:

1.	6 − 5	10 − 6	5 − 2	0 − 0	9 − 3	2 − 1	9 − 8	3 − 2
2.	5 − 0	10 − 1	1 − 1	4 − 3	9 − 0	9 − 2	8 − 4	5 − 3
3.	8 − 1	8 − 3	10 − 4	9 − 5	7 − 7	5 − 1	8 − 2	6 − 4
4.	7 − 0	10 − 9	8 − 8	8 − 5	3 − 3	5 − 4	1 − 0	7 − 3
5.	5 − 5	9 − 6	3 − 0	4 − 4	9 − 4	7 − 2	9 − 7	8 − 6
6.	2 − 0	4 − 2	7 − 4	7 − 1	6 − 6	7 − 5	10 − 2	8 − 0
7.	4 − 1	10 − 5	6 − 3	2 − 2	6 − 1	3 − 1	6 − 0	10 − 7
8.	6 − 2	9 − 1	10 − 8	9 − 9	8 − 7	4 − 0	7 − 6	10 − 3

To the Teacher. The 64 subtraction facts given above include all the subtraction facts with minuends up to 10. The 100 subtraction facts are given on page 74. When the pupil takes an oral test like the one above, the teacher should check all facts for which the pupil gives unsatisfactory responses; at the end of the test the teacher should give the pupil a list of these particular facts, with instructions to study them carefully. An unsatisfactory response is one which is incorrect or which is given with considerable hesitation, even though it be correct.

Some teachers prefer to make tests on the basic facts by means of flash cards, each card containing one fact. After the teacher shows a card to the pupil, she places the card in one of three piles according as the response is satisfactory, delayed, or incorrect.

THE CALENDAR

1. This is a calendar for the month of October. Read all the numbers on it.

2. Read the days in October like this: October first, October second, October third, and so on.

3. Name the days of the week.

4. Look at the calendar above. On what day of the week does October 15 come? October 20? October 31?

MONTHS OF THE YEAR

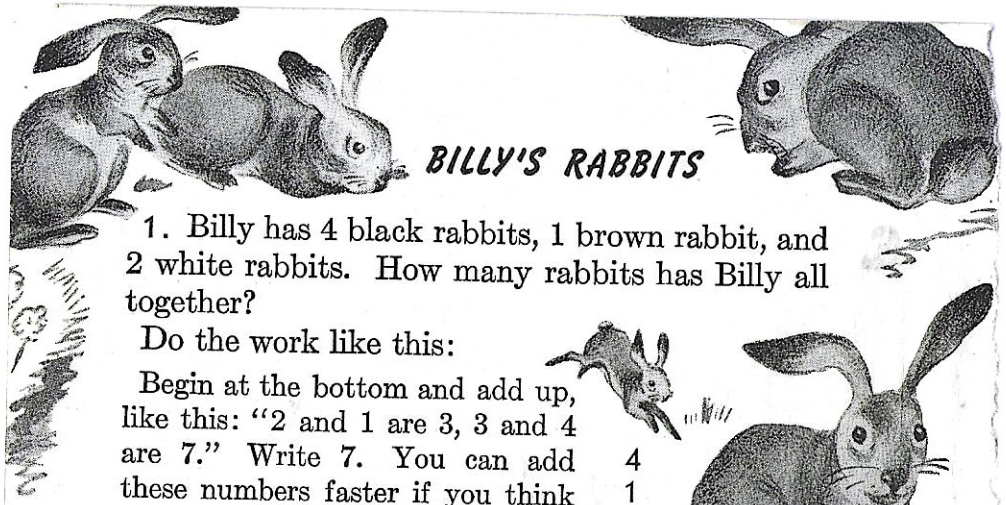
Here are the months of the year:

1. January	4. April	7. July	10. October
2. February	5. May	8. August	11. November
3. March	6. June	9. September	12. December

1. What is the name of the first month of the year? the tenth month? the sixth month? the eighth month?

2. What month of the year is April? December? May? July? October?

3. The four seasons of the year are spring, summer, fall, and winter. On pages 28 and 29, which picture shows spring? summer? fall? winter?



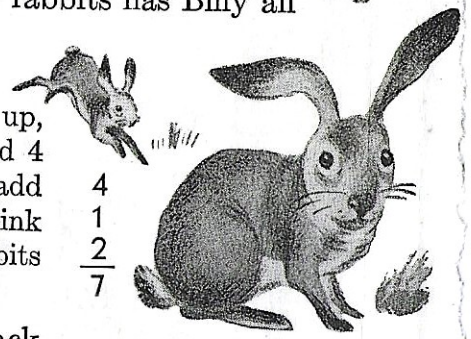
BILLY'S RABBITS

1. Billy has 4 black rabbits, 1 brown rabbit, and 2 white rabbits. How many rabbits has Billy all together?

Do the work like this:

Begin at the bottom and add up, like this: "2 and 1 are 3, 3 and 4 are 7." Write 7. You can add these numbers faster if you think only "2, 3, 7." Billy has 7 rabbits in all.

$$\begin{array}{r} 4 \\ 1 \\ \underline{2} \\ 7 \end{array}$$



2. Billy wants to sell 2 black rabbits, 1 brown rabbit, and 1 white rabbit. How many rabbits does Billy want to sell?

Add these numbers:

3.	5	4	3	1	0	7	2	1
	1	3	1	3	2	2	2	5
	2	2	4	2	3	1	4	3
4.	3	6	5	1	3	2	6	4
	0	2	1	1	3	5	3	1
	3	2	3	5	1	2	1	3
5.	5	1	2	3	1	6	3	2
	4	7	3	3	5	1	3	3
	1	1	3	4	4	0	3	2
6.	2	7	6	3	4	1	5	1
	1	0	1	2	1	2	3	1
	6	3	3	4	4	7	1	8

Column addition, sums to 10.

1. Jack had 68¢. He spent 25¢ for a book. How many cents did Jack have left?

Subtract 25 from 68. The teacher will tell you which method to use. Do not learn both methods.

Additive Method. You have learned that you can subtract 6 from 9 by adding enough to 6 to make 9. If you add 3 to 6, you get 9. So 3 is the answer.

In the same way you can subtract 25 from 68 by adding enough to 25 to make 68. This is the way you do it. Write 25 under 68. Think, "5 ones and **3** ones are 8 ones." Write 3. Think, "2 tens and **4** tens are 6 tens." Write 4.

$$\begin{array}{r} 68 \\ \underline{25} \\ 43 \end{array}$$

The answer is 43. If you add 43 to 25, you get 68, so 43 is right. Jack had 43¢ left.

Take-Away Method. Think, "5 ones from 8 ones, **3** ones." Write 3. Think, "2 tens from 6 tens, **4** tens." Write 4. The answer is 43. So Jack had 43¢ left.

Subtract these numbers:

2.	47	55	89	35	98	83	95	65
	25	14	28	15	47	53	72	30
3.	62	89	74	67	37	78	69	87
	41	42	33	17	24	66	23	51
4.	96	84	78	97	59	66	82	94
	53	30	21	13	36	15	32	23
5.	99	43	99	76	42	47	56	79
	34	22	79	32	30	16	24	50

Subtracting two-figure numbers without carrying or borrowing.

In each problem first tell whether you add or subtract to find the answer. Then work the problem:

1. Bill had 42¢. He earned 25¢ raking leaves. How many cents did Bill have then?

2. Ann had a quarter. She spent 15¢ for the movies. How much did Ann have left?

3. There are 44 children in Miss Day's class and only 33 books. How many more books does the class need so that each child can have a book?

4. Last Saturday Jack and Sally went to the park. They paid 24¢ to ride on the bus and 50¢ for lunch. How much did they spend in all?

5. Betty wants to invite 24 children to her Halloween party. She has invited 14 of them. How many more children must she invite?

6. Tom had 50 marbles. Today he bought 20 marbles. How many marbles has Tom now?

7. Joe worked 15 hours on one model airplane and 22 hours on another. How many hours did he work all together on these airplanes?

8. Alice earned 20¢ and put 10¢ of it in her bank. How many cents did she keep to spend?

9. Mary baked 12 cookies in one pan and 15 cookies in another pan. How many cookies did Mary bake?

10. Bob wants a flashlight that costs 75¢. He has saved 45¢. How much more does he need to save?

11. Peggy found 4 red leaves, 3 brown leaves, and 3 yellow leaves. How many leaves did Peggy find?

1. At our pet show there were 4 dogs, 3 kittens, and 2 white mice. How many pets were in our show?

2. Nancy spent 5¢ for bus fare and 4¢ for candy. How much did Nancy spend?

3. Bill saved 25¢. He spent 10¢ for a pad. How much money did he have left?

4. Tom wants a top that costs 10¢. He has 3 pennies. How many more pennies does he need?

5. Mary had 24¢. Her mother gave her 11¢. How much did Mary have then?

6. Jim bought a box with 9 cookies in it. He ate 4 cookies. How many cookies did he have then?

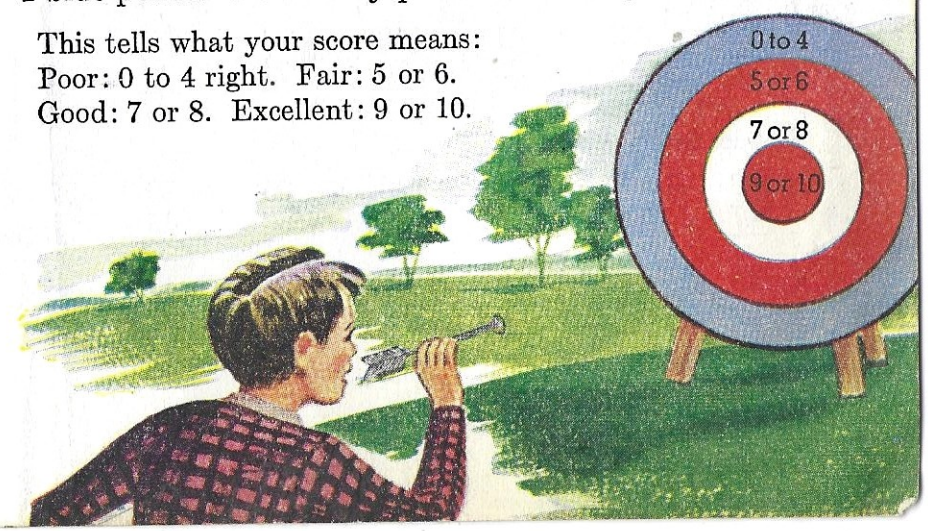
7. Jane was drying dishes. There were 8 glasses. 2 fell and broke. How many glasses were left?

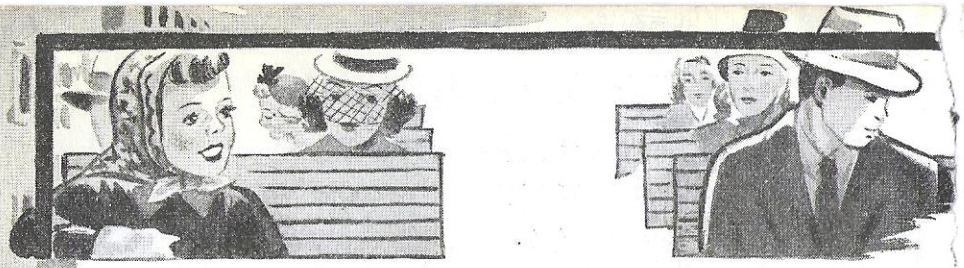
8. Jack had 11 small pumpkins and 13 large pumpkins in his garden. How many did he have all together?

9. Jack sold 10 of his 24 pumpkins. How many pumpkins did he have left?

10. Betty has 5 yellow pencils, 4 red pencils, and 1 blue pencil. How many pencils has Betty?

This tells what your score means:
Poor: 0 to 4 right. Fair: 5 or 6.
Good: 7 or 8. Excellent: 9 or 10.





ADDITION AND SUBTRACTION REVIEW

1. Betty spent 10¢ to ride on the bus and 20¢ for a movie. How much did Betty spend?

2. Joe had 36 tickets to sell for the school play. He sold 22 tickets today. How many tickets has Joe left to sell?

3. The girls in Sally's class want to make 96 paper flowers for the play. They made 42 flowers yesterday. How many flowers do they need to make now?

4. Jane earned 45¢ last week and 50¢ this week. How many cents did Jane earn in all?

5. Tom had 24 chickens. His father gave him 12 more chickens. How many chickens had Tom then?

Add these numbers:

6.	32	24	56	12	12	32	41
	46	45	43	25	87	63	24
7.	61	33	41	13	24	15	13
	26	53	35	70	24	32	12

Subtract these numbers:

8.	78	68	64	78	95	59	78
	47	35	54	38	80	45	54
9.	45	96	39	57	38	47	64
	32	74	26	32	13	27	21

CHAPTER REVIEW

1. Count by 5's from 30 to 100.

2. Count by 1's from 40 to 60.

3. Tell the numbers that come between 41 and 47; between 28 and 34; between 68 and 75.

4. What number comes before 18? 23? 42? 67? 90?

5. What number comes after 15? 29? 48? 80? 99?

6. Which is the smallest number? 42, 39, 51.

7. Which is the largest number? 35, 39, 27.

8. Name in order the months of the year.

9. Look at a calendar. Tell the name of the second month of the year; the third month; the sixth month.

Tell what numbers should be put in the spaces:

10. 1 dime = . . . nickels 1 dime = . . . cents

11. 1 quarter = . . . nickels 1 quarter = . . . cents

12. 1 half dollar = . . . dimes 1 nickel = . . . cents

13. Tell what number means 2 tens and 5 ones; 1 ten and 8 ones; 6 tens and 0 ones.

Give the answers. Watch the signs:

14.	4	7	0	8	7	10	10
	+ 6	+ 2	+ 8	− 6	− 3	− 2	− 6
15.	25	36	40	60	12	33	43
	+ 12	+ 22	+ 19	+ 20	+ 55	+ 52	+ 23
16.	89	45	78	50	49	56	32
	− 16	− 30	− 25	− 30	− 14	− 46	− 20

CHAPTER TWO

New Addition and Subtraction Facts

After school today the boys and girls in the third grade are to have a party. Some of the children are getting ready for it.

1. The girls bought 6 loaves of white bread and 6 loaves of brown bread. How many loaves of bread are there? How many are 6 and 6?

$$\begin{array}{r} 6 \\ \underline{6} \\ 12 \end{array}$$

2. Some children brought 7 white cakes and 7 chocolate cakes. How many cakes are there in all? How many are 7 and 7?

$$\begin{array}{r} 7 \\ \underline{7} \\ 14 \end{array}$$

3. The boys bought 8 boxes of chocolate ice cream and 8 boxes of orange ice cream. How many boxes of ice cream did they buy? How many are 8 and 8?

$$\begin{array}{r} 8 \\ \underline{8} \\ 16 \end{array}$$

4. There are 9 bottles of plain milk and 9 bottles of chocolate milk for the children to drink. How many bottles of milk are there? How many are 9 and 9?

$$\begin{array}{r} 9 \\ \underline{9} \\ 18 \end{array}$$

Numbers like 7 and 7 are called *doubles* because both numbers are the same.

5. Add these numbers:

$$\begin{array}{ccccccccc} 7 & 4 & 8 & 6 & 9 & 5 & 3 & 2 & 1 \\ \underline{7} & \underline{4} & \underline{8} & \underline{6} & \underline{9} & \underline{5} & \underline{3} & \underline{2} & \underline{1} \end{array}$$

Four new addition facts — the doubles. All new addition facts in this chapter have sums over 10.

1. There were 12 yellow flowers in the garden. Mother picked 6 of them this morning. How many yellow flowers were left in the garden?
6 and 6 are 12, so 6 from 12 is . . .

$$\begin{array}{r} 12 \\ -\ 6 \\ \hline 6 \end{array}$$

2. Joe counted 14 children on the school bus. At the next stop 7 children got off. How many children were left on the bus?
7 and 7 are . . ., so 7 from 14 is . . .

$$\begin{array}{r} 14 \\ -\ 7 \\ \hline 7 \end{array}$$

3. Bill had 16¢ in his bank. If he spent 8¢ for pencils, how many cents did Bill have left in his bank?
8 and 8 are . . ., so 8 from 16 is . . .

$$\begin{array}{r} 16 \\ -\ 8 \\ \hline 8 \end{array}$$

4. Mother made 18 cookies today. The children ate 9 of them. How many cookies did Mother have left?
9 and 9 are . . ., so 9 from 18 is . . .

$$\begin{array}{r} 18 \\ -\ 9 \\ \hline 9 \end{array}$$

5. 8 from 16 is . . . 6 from 12 is . . .

6. 9 from 18 is . . . 7 from 14 is . . .

Subtract these numbers:

7.	14 − 7	18 − 9	12 − 6	16 − 8	10 − 5	14 − 7	16 − 8	8 − 4
8.	12 − 6	10 − 5	18 − 9	14 − 7	16 − 8	18 − 9	12 − 6	6 − 3
9.	18 − 9	16 − 8	14 − 7	18 − 9	12 − 6	16 − 8	10 − 5	4 − 2

Four new subtraction facts corresponding to the addition facts on pages 36 and 37.

1. Jack has a new story book of 65 pages. He has read 43 pages. How many more pages has he to read?

2. We have 25 story books and 10 picture books on our library table in school. How many books of both kinds do we have?

3. This morning we saw 5 squirrels on the ground, 3 in a tree, and 2 on the fence. How many squirrels in all did we see?

4. Ann bought 12 eggs at the store. Her mother used 6 eggs. How many eggs were left?

5. Bill had 59¢. He spent 25¢ to go to the movies. How much did he have left?

6. Betty has 43¢ in her bank. She earned 25¢ more. How much money has Betty now?

7. Tom would like to buy a book that costs 67¢. He has 35¢. How many more cents does he need?

8. Mary is making cookies. She has baked a pan of 9. She has 9 more ready to bake. How many cookies will Mary have all together?

9. Dick keeps hens. Yesterday he got 21 eggs and today he got 18 eggs. How many eggs did he get in the two days?

10. Mrs. Smith wants to buy 24 eggs from Dick. How many of the 39 eggs will he have left?

11. Alice had 14¢. She bought a pad for 7¢. How many cents did she have left?

12. Jim has saved 8¢ this week. His father gave him 8¢. How much did Jim have then?

SAILING BOATS

1. There are 5 large boats and 5 small boats on the lake. How many are 5 and 5? Tom is coming with his small boat. That will make 5 large boats and 6 small boats, or . . . boats all together.

$$\begin{array}{r} 5 \\ 6 \\ \hline 11 \end{array} \qquad \begin{array}{r} 6 \\ 5 \\ \hline 11 \end{array}$$

5 and 5 are . . ., so 5 and 6 are . . . How many are 5 and 6? How many are 6 and 5?

2. Last Saturday there were 6 small boats and 6 large boats on the lake. How many are 6 and 6? Then Bob brought his large boat. That made 6 small boats and 7 large boats. How many boats in all was that?

$$\begin{array}{r} 6 \\ 7 \\ \hline 13 \end{array} \qquad \begin{array}{r} 7 \\ 6 \\ \hline 13 \end{array}$$

6 and 6 are . . ., so 6 and 7 are . . . How many are 6 and 7? How many are 7 and 6?

3. 7 boats and 7 boats are . . . boats. 7 boats and 8 boats are . . . boats. How many are 7 and 8? How many are 8 and 7?

$$\begin{array}{r} 7 \\ 8 \\ \hline 15 \end{array} \qquad \begin{array}{r} 8 \\ 7 \\ \hline 15 \end{array}$$

4. 8 boats and 8 boats are . . . boats. 8 boats and 9 boats are . . . boats. How many are 8 and 9? How many are 9 and 8?

$$\begin{array}{r} 8 \\ 9 \\ \hline 17 \end{array} \qquad \begin{array}{r} 9 \\ 8 \\ \hline 17 \end{array}$$

5. 6 and 6 helps you to add 6 and 7. 6 and 6 are doubles. 6 and 7 are *almost doubles* because 7 is only 1 more than 6. The sum of 6 and 7 is 1 more than the sum of 6 and 6. The *doubles* help you to add numbers that are *almost doubles*.

$$\begin{array}{r} 6 \\ 6 \end{array} \qquad \begin{array}{r} 6 \\ 7 \end{array}$$

6. 5 children and 6 children are . . . children.

7. 6 children and 5 children are . . . children.

Add. Tell which numbers are almost doubles:

8.	2	4	1	9	5	4	6	5	7
	3	4	2	9	6	5	6	4	7
9.	5	3	6	7	8	8	7	9	6
	5	4	7	8	8	9	6	8	5
10.	2	8	9	3	6	5	7	4	7
	1	7	9	2	7	6	6	3	7

Eight new addition facts — the near doubles.

SELLING TICKETS

The children are going to have a school circus. They are selling tickets for it. Each one will sell as many tickets as he can.

1. Betty can sell 11 tickets to her friends. She has 6 tickets now. How many more tickets will she need? 6 and how many are 11?

2. Joe can sell 13 tickets in all. He has only 6 tickets now. How many more does he need to get? 6 and how many are 13?

3. Tom says that 15 friends will buy tickets from him. He has 7 tickets now. How many more tickets does he need? 7 and how many are 15?

4. Mary says that she can sell 17 tickets. She has 9 tickets now. How many more does she need? 9 and how many are 17?

Tell what number should be put in each space:

5. 9 and . . . are 18.	8 and . . . are 15.
6. 7 and . . . are 15.	5 and . . . are 11.
7. 8 and . . . are 17.	6 and . . . are 11.
8. 7 and . . . are 13.	6 and . . . are 13.
9. 6 and . . . are 12.	8 and . . . are 16.
10. 9 and . . . are 17.	7 and . . . are 14.
11. 7 and . . . are 14.	5 and . . . are 10.
12. 6 and . . . are 13.	9 and . . . are 17.
13. 7 and . . . are 15.	9 and . . . are 18.

Preparation for new facts on page 44.

MORE ABOUT NUMBERS

1. The number 57 means 5 tens and 7 ones.

2. The number 60 means 6 tens and 0 ones. 0 is used to show that there are *no* ones.

3. The number 357 means 3 hundreds, 5 tens, and 7 ones. You read it *three hundred fifty-seven.*

4. The number 350 means 3 hundreds, 5 tens, and 0 ones. You read it *three hundred fifty.*

5. The number 305 means 3 hundreds, 0 tens, and 5 ones. You read it *three hundred five.*

6. The number 400 means 4 hundreds, 0 tens, and 0 ones. You read it *four hundred.*

7. How many hundreds are there in 73?

Read each number. Also tell what number goes in each space:

8. 943 means . . . hundreds, . . . tens, and . . . ones.
9. 602 means . . . hundreds, . . . tens, and . . . ones.
10. 570 means . . . hundreds, . . . tens, and . . . ones.
11. 200 means . . . hundreds, . . . tens, and . . . ones.
12. 921 means . . . hundreds, . . . tens, and . . . one.

Write the number that means

13. 4 hundreds, 6 tens, 5 ones	9 tens and 3 ones
14. 2 hundreds, 4 tens, 0 ones	5 tens and 0 ones
15. 6 hundreds, 0 tens, 9 ones	4 tens and 0 ones
16. 8 hundreds, 0 tens, 0 ones	7 tens and 8 ones

Meaning of three-figure numbers.

1. 5 and . . . are 11, so 5 from 11 is 6. 6 and . . . are 11, so 6 from 11 is 5. How many are 5 from 11? How many are 6 from 11?

$$\begin{array}{r} 11 \\ -\ 5 \\ \hline 6 \end{array} \qquad \begin{array}{r} 11 \\ -\ 6 \\ \hline 5 \end{array}$$

2. 6 and . . . are 13, so 6 from 13 is . . . 7 and . . . are 13, so 7 from 13 is . . . How many are 6 from 13? How many are 7 from 13?

$$\begin{array}{r} 13 \\ -\ 6 \\ \hline 7 \end{array} \qquad \begin{array}{r} 13 \\ -\ 7 \\ \hline 6 \end{array}$$

3. 7 and . . . are 15, so 7 from 15 is . . . 8 and . . . are 15, so 8 from 15 is . . . How many are 7 from 15? How many are 8 from 15?

$$\begin{array}{r} 15 \\ -\ 7 \\ \hline 8 \end{array} \qquad \begin{array}{r} 15 \\ -\ 8 \\ \hline 7 \end{array}$$

4. 8 and . . . are 17, so 8 from 17 is . . . 9 and . . . are 17, so 9 from 17 is . . . How many are 8 from 17? How many are 9 from 17?

$$\begin{array}{r} 17 \\ -\ 8 \\ \hline 9 \end{array} \qquad \begin{array}{r} 17 \\ -\ 9 \\ \hline 8 \end{array}$$

Tell the answers:

5. $\begin{array}{r} 6 \\ -\ 3 \end{array}$ $\begin{array}{r} 9 \\ -\ 4 \end{array}$ $\begin{array}{r} 3 \\ -\ 1 \end{array}$ $\begin{array}{r} 17 \\ -\ 9 \end{array}$ $\begin{array}{r} 11 \\ -\ 6 \end{array}$ $\begin{array}{r} 15 \\ -\ 8 \end{array}$ $\begin{array}{r} 10 \\ -\ 5 \end{array}$ $\begin{array}{r} 14 \\ -\ 7 \end{array}$

6. $\begin{array}{r} 3 \\ -\ 2 \end{array}$ $\begin{array}{r} 7 \\ -\ 4 \end{array}$ $\begin{array}{r} 4 \\ -\ 2 \end{array}$ $\begin{array}{r} 13 \\ -\ 7 \end{array}$ $\begin{array}{r} 16 \\ -\ 8 \end{array}$ $\begin{array}{r} 17 \\ -\ 9 \end{array}$ $\begin{array}{r} 12 \\ -\ 6 \end{array}$ $\begin{array}{r} 11 \\ -\ 5 \end{array}$

7. $\begin{array}{r} 5 \\ -\ 3 \end{array}$ $\begin{array}{r} 8 \\ -\ 4 \end{array}$ $\begin{array}{r} 2 \\ -\ 1 \end{array}$ $\begin{array}{r} 15 \\ -\ 7 \end{array}$ $\begin{array}{r} 13 \\ -\ 6 \end{array}$ $\begin{array}{r} 18 \\ -\ 9 \end{array}$ $\begin{array}{r} 11 \\ -\ 6 \end{array}$ $\begin{array}{r} 17 \\ -\ 8 \end{array}$

8. $\begin{array}{r} 9 \\ -\ 5 \end{array}$ $\begin{array}{r} 7 \\ -\ 3 \end{array}$ $\begin{array}{r} 5 \\ -\ 2 \end{array}$ $\begin{array}{r} 16 \\ -\ 8 \end{array}$ $\begin{array}{r} 11 \\ -\ 5 \end{array}$ $\begin{array}{r} 17 \\ -\ 8 \end{array}$ $\begin{array}{r} 13 \\ -\ 7 \end{array}$ $\begin{array}{r} 15 \\ -\ 8 \end{array}$

Eight new subtraction facts corresponding to the addition facts on pages 40 and 41.

1. Bob had 15¢. He bought a top for 8¢. How many cents did he have left?

2. Ned earned 25¢. He bought a ball that cost 10¢. How much money did Ned have left?

3. There were 13 apples on the table. The boys ate 6 of these apples. How many apples were left on the table? How many are 6 from 13?

4. Joe had 17 marbles. He gave 9 marbles to Bob. How many marbles did Joe have left?

Subtract these numbers:

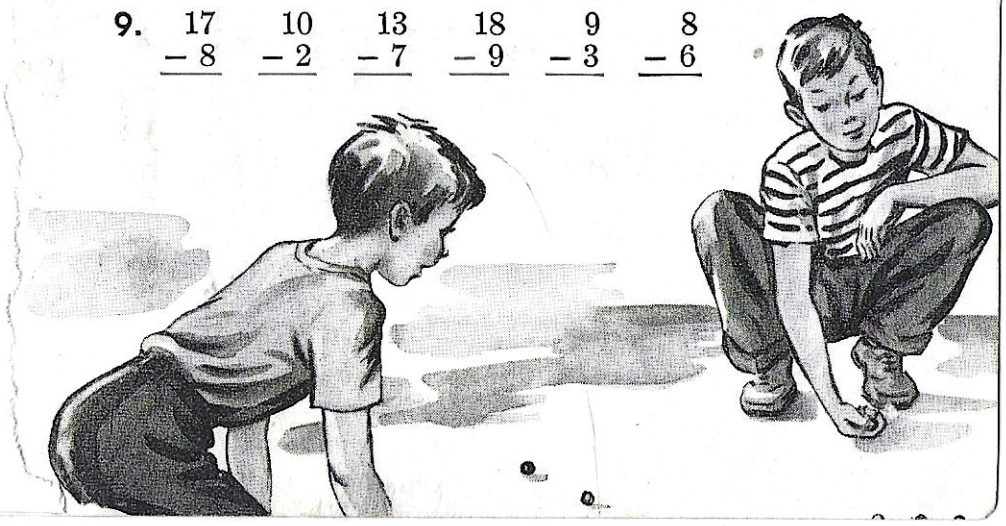
5. $\begin{array}{r} 11 \\ -\ 6 \end{array}$ $\begin{array}{r} 17 \\ -\ 8 \end{array}$ $\begin{array}{r} 13 \\ -\ 6 \end{array}$ $\begin{array}{r} 10 \\ -\ 5 \end{array}$ $\begin{array}{r} 7 \\ -\ 3 \end{array}$ $\begin{array}{r} 9 \\ -\ 9 \end{array}$ $\begin{array}{r} 9 \\ -\ 4 \end{array}$ $\begin{array}{r} 5 \\ -\ 2 \end{array}$

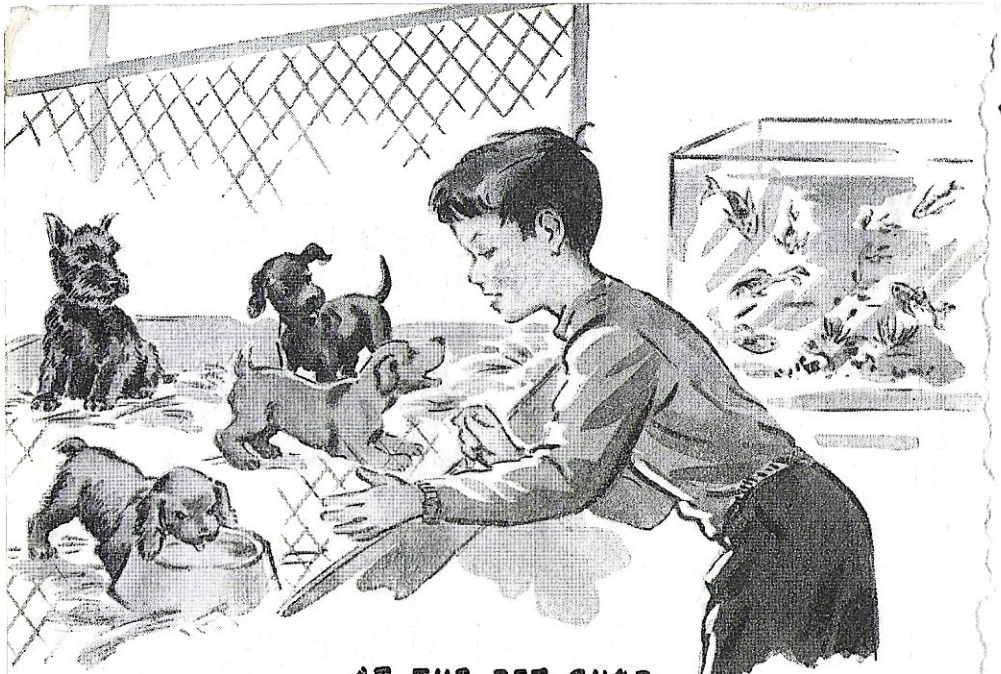
6. $\begin{array}{r} 15 \\ -\ 7 \end{array}$ $\begin{array}{r} 18 \\ -\ 9 \end{array}$ $\begin{array}{r} 11 \\ -\ 5 \end{array}$ $\begin{array}{r} 17 \\ -\ 9 \end{array}$ $\begin{array}{r} 9 \\ -\ 5 \end{array}$ $\begin{array}{r} 7 \\ -\ 4 \end{array}$ $\begin{array}{r} 8 \\ -\ 5 \end{array}$ $\begin{array}{r} 3 \\ -\ 2 \end{array}$

7. $\begin{array}{r} 13 \\ -\ 7 \end{array}$ $\begin{array}{r} 16 \\ -\ 8 \end{array}$ $\begin{array}{r} 15 \\ -\ 8 \end{array}$ $\begin{array}{r} 12 \\ -\ 6 \end{array}$ $\begin{array}{r} 5 \\ -\ 3 \end{array}$ $\begin{array}{r} 3 \\ -\ 1 \end{array}$ $\begin{array}{r} 7 \\ -\ 2 \end{array}$ $\begin{array}{r} 6 \\ -\ 5 \end{array}$

8. $\begin{array}{r} 10 \\ -\ 6 \end{array}$ $\begin{array}{r} 15 \\ -\ 7 \end{array}$ $\begin{array}{r} 17 \\ -\ 9 \end{array}$ $\begin{array}{r} 14 \\ -\ 7 \end{array}$ $\begin{array}{r} 8 \\ -\ 8 \end{array}$ $\begin{array}{r} 6 \\ -\ 4 \end{array}$ $\begin{array}{r} 5 \\ -\ 1 \end{array}$ $\begin{array}{r} 9 \\ -\ 6 \end{array}$

9. $\begin{array}{r} 17 \\ -\ 8 \end{array}$ $\begin{array}{r} 10 \\ -\ 2 \end{array}$ $\begin{array}{r} 13 \\ -\ 7 \end{array}$ $\begin{array}{r} 18 \\ -\ 9 \end{array}$ $\begin{array}{r} 9 \\ -\ 3 \end{array}$ $\begin{array}{r} 8 \\ -\ 6 \end{array}$





AT THE PET SHOP

1. Jack and Mary went to the pet shop. They saw 8 kittens and 6 puppies. How many more kittens than puppies were there? How many less puppies than kittens were there?

2. There were 5 gray kittens and 3 black kittens. How many more gray kittens than black kittens were there in the pet shop?

3. Four of the puppies were black and 2 were brown. How many less brown puppies than black ones did the children see?

4. Mary has 2 kittens at home. The pet shop has 8 kittens. How many more kittens does the pet shop have than Mary?

5. Jack saw 12 white mice and 6 turtles in the pet shop. How many less turtles than mice were there?

6. The children saw the goldfish. There were 7 small fish and 4 large fish. How many more small ones than large ones were there?

7. Jack bought 6 white mice. Mary bought 2 white mice. How many more mice did Jack buy than Mary?

Subtract to find *how many more* or *how many less* one number is than another.

Comparing numbers by subtraction.

CHECKING COLUMN ADDITION

1. Jack has 2 kittens, 3 rabbits, and 4 goldfish. How many pets has Jack?

To add the column at the right, begin at the bottom and add up, thinking "4, 7, 9."

To be sure that 9 is the right answer, add the numbers again, beginning at the top and adding down. Think "2, 5, 9." Since you get the same answer both times, call the work right. This means that you have *checked* the work.

$$\begin{array}{r} 2 \\ 3 \\ 4 \\ \hline 9 \end{array}$$

Add these numbers and check the work:

2.	7 1 2	3 2 1	2 4 3	7 1 1	3 4 3	2 2 2	1 3 3	1 4 5
3.	0 5 5	4 3 3	9 1 0	1 3 4	5 0 3	4 2 4	5 2 2	5 1 4
4.	2 3 4	3 3 2	4 4 2	4 0 3	3 2 4	2 7 1	3 1 6	4 4 1
5.	4 3 1	0 0 9	1 1 6	3 5 1	5 2 1	1 8 1	6 1 2	1 5 4
6.	2 5 3	7 3 0	6 2 1	3 1 5	3 7 0	2 1 4	1 4 3	1 4 4
7.	2 1 6	3 4 2	1 0 9	6 1 3	2 3 2	2 4 4	5 3 2	7 2 1

1. There are 73 children in the third grade and 65 children in the fourth grade. How many children are there in the two grades?

When you add, begin at the bottom and add up. Think, "5 + 3 = 8; 6 + 7 = 13."

To be sure that 138 is the right sum, check the work by adding the numbers again. Begin at the top and add down, thinking, "3 + 5 = 8; 7 + 6 = 13." If you get the same sum both times, call the answer right.

$$\begin{array}{r} 73 \\ 65 \\ \hline 138 \end{array}$$

2. Joe was looking out of the window. He counted 73 passenger cars and 35 trucks going past the house. How many automobiles did he count all together?

Add these numbers:

3.	94 13	75 61	24 80	76 72	53 62	32 72	91 83	63 51
4.	65 62	86 90	72 84	48 61	82 85	10 96	54 52	91 94
5.	81 27	56 63	73 33	91 96	77 61	81 95	72 73	34 74
6.	70 74	62 46	54 53	23 86	85 72	66 51	95 84	84 25
7.	79 30	71 82	61 68	67 42	92 91	85 23	74 61	92 86
8.	57 52	13 95	36 72	45 64	63 74	82 87	65 53	71 67

Adding two-figure numbers with three-figure sums.

CHECKING SUBTRACTION

1. Tom's father weighs 135 pounds and Tom weighs 71 pounds. How many pounds less does Tom weigh than his father?

You subtract 71 from 135 as shown here. To check the work, add the answer, 64, to 71 and see if the sum is 135. Add up, thinking, "4+1=5, 6+7=13." You find that the answer is 135, so the work is right.

$$\begin{array}{r} 135 \\ 71 \\ \hline 64 \end{array}$$

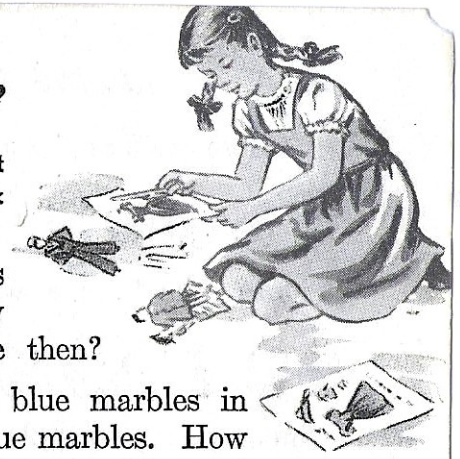
2. How much more is 107 than 54? How much less is 65 than 118?

Subtract these numbers and check:

3.	104	135	146	119	172	104
	13	61	72	64	82	80
4.	158	109	128	175	105	147
	82	63	61	90	94	74
5.	117	186	155	134	174	107
	51	94	72	72	91	45
6.	149	103	166	107	109	118
	78	21	81	53	36	54
7.	128	159	138	102	103	119
	66	71	78	81	60	62
8.	108	177	139	109	159	106
	21	83	69	38	76	41
9.	156	105	108	110	166	185
	82	72	51	60	82	94

Three-figure minuends in subtraction.

DO YOU ADD OR SUBTRACT?



Tell whether you should add or subtract in each of these problems. Then work the problem:

1. John had 9 marbles. His brother gave him 8 more. How many marbles did John have then?

2. Peter wants to have 15 blue marbles in all. Last week he bought 7 blue marbles. How many more blue marbles does Peter need to buy?

3. Ann had 15 paper dolls. She gave 8 of them to Betty. How many did she have left?

4. John had 17 marbles. Bill had 9 marbles. How many more marbles did John have than Bill?

5. Mary is selling tickets for the school play. She sold 6 tickets yesterday and 7 tickets today. How many tickets has Mary sold in the two days?

6. Jane wants to sell 11 tickets. She sold 6 tickets today. How many more must she sell?

7. Betty sold 13 tickets today and Jane sold 6. How many less tickets did Jane sell than Betty?

8. Bill earned 17 cents and Tom earned 8 cents. How many more cents did Bill earn than Tom?

9. John had 11 cents. He spent 5 cents for candy. How much money did he have left?

10. Mary spent 15¢ for a game and 32¢ for a doll. How much did she spend for both?

11. Mother made 36 sugar cookies and 24 nut cookies. How many less nut cookies than sugar cookies did Mother make?

1. Here are 9 apples and 4 apples:

Put 1 of the 4 apples with the 9 apples like this:

You now have 10 apples and 3 apples. You see that 9 and 4 make 10 and 3, or 13. How many are 9 and 4? How many are 4 and 9?

$$\begin{array}{r} 9 \\ 4 \\ \hline 13 \end{array} \qquad \begin{array}{r} 4 \\ 9 \\ \hline 13 \end{array}$$

2. Show that 9 apples and 6 apples are the same as 10 apples and 5 apples, or ... apples. How many are 9 and 6? How many are 6 and 9?

$$\begin{array}{r} 9 \\ 6 \\ \hline 15 \end{array} \qquad \begin{array}{r} 6 \\ 9 \\ \hline 15 \end{array}$$

> To add 9 and 6, take 1 from 6, which gives 5. Then add 10, which gives 15.

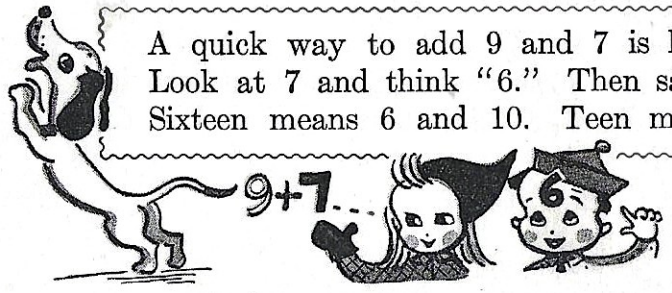
3. Show that 9 pencils and 3 pencils are the same as 10 pencils and ... pencils, or ... pencils. How many are 9 and 3? How many are 3 and 9?

$$\begin{array}{r} 9 \\ 3 \\ \hline 12 \end{array} \qquad \begin{array}{r} 3 \\ 9 \\ \hline 12 \end{array}$$

4. Draw 9 stars. Then draw 7 more stars. Show that 9 and 7 make 10 and ..., or ... How many are 9 and 7? How many are 7 and 9?

$$\begin{array}{r} 9 \\ 7 \\ \hline 16 \end{array} \qquad \begin{array}{r} 7 \\ 9 \\ \hline 16 \end{array}$$

> A quick way to add 9 and 7 is like this: Look at 7 and think "6." Then say "16." Sixteen means 6 and 10. Teen means 10.



5. Show that 9 and 5 make 10 and ..., or ... How many are 9 and 5? How many are 5 and 9? A quick way to add 9 and 5 is like this: Look at 5 and think "..." Then say "..."

$$\begin{array}{r} 9 \\ 5 \\ \hline 14 \end{array} \qquad \begin{array}{r} 5 \\ 9 \\ \hline 14 \end{array}$$

6. Show that 9 cents and 2 cents make 10 cents and 1 cent. How many are 9 and 2? How many are 2 and 9?

$$\begin{array}{r} 9 \\ 2 \\ \hline 11 \end{array} \qquad \begin{array}{r} 2 \\ 9 \\ \hline 11 \end{array}$$

7. How many are 9 and 8? How many are 9 and 9? These facts were also given on pages 37 and 41.

8. Try to remember the new facts in ex. 1 to 6.

Add these numbers:

9.	9	9	4	9	8	9	7	5
	3	7	9	9	9	6	9	9
10.	6	9	3	9	2	9	9	9
	9	2	9	5	9	8	9	4

11. 9 and 7 are ... 3 and 9 are ...
12. 9 and 2 are ... 4 and 9 are ...
13. 9 and 4 are ... 6 and 9 are ...
14. 9 and 6 are ... 2 and 9 are ...
15. 9 and 5 are ... 5 and 9 are ...
16. 9 and 3 are ... 7 and 9 are ...
17. 9 and 8 are ... 1 and 9 are ...
18. 9 and 9 are ... 8 and 9 are ...
19. 9 and 4 are ... 6 and 9 are ...

Twelve new addition facts having 9 as one addend.

YES OR NO?

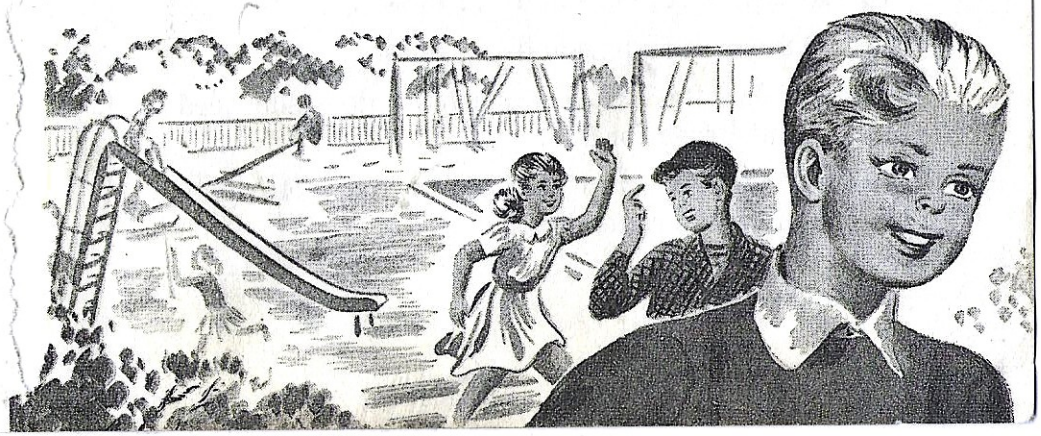
Read each exercise. Then tell whether it is right or wrong by saying "yes" or "no":

1. Nine and nine make eighteen.
2. 11 cents is less than a dime.
3. The sum of 20 and 60 is 80.
4. The third month of the year is April.
5. A dime and a nickel make a quarter.
6. Saturday is the next day after Friday.
7. You add to find how many 7 less 5 is.
8. Five dimes are the same as a half dollar.
9. The number that means 7 tens and 8 ones is 78.
10. Mary had 4 cents. She earned 6 cents. Then she had 10 cents all together.
11. Bob had 12 marbles. He lost 6 of them. Then he had 5 marbles left.
12. If you add 7 and 3, the sum is 10.
13. The answer for 7 + 8 is the same as the answer for 8 + 7.
14. Ann has a quarter. She wants to buy a doll for 35¢. She needs 5¢ more.
15. 89 is a larger number than 98.
16. The next two numbers after 99 are 100 and 101.
17. Two and two and three make six.
18. The sum of 4 and 9 is the same as the sum of 3 and 10. The sum of 7 and 9 is the same as the sum of 6 and 10.

1. On the playground there are 9 boys and 9 girls. How many children are there on the playground?
2. There are 9 girls and 3 boys playing on the slide. How many children are on the slide?
3. Yesterday there were 6 girls and 9 boys playing on the slide. How many children were on the slide?
4. Show that 9 and 9 make 10 and . . ., or . . . . You have studied 9 and 9 before this. On what page was it? You have also studied 9 and 8. Where was it?

Add these numbers:

5.	8	9	9	9	2	6	4	9	9
	9	3	5	9	9	9	9	7	1
6.	9	9	7	9	9	3	5	9	9
	6	2	9	4	8	9	9	0	9
7.	0	9	9	1	9	7	9	2	6
	9	5	8	9	2	9	4	9	9
8.	8	9	4	9	9	9	9	9	3
	9	1	9	7	0	6	9	5	9
9.	1	0	9	2	7	9	6	9	5
	9	9	8	9	9	4	9	3	9



Tell the answers. Watch the signs:

1.	9	6	11	5	15	10	6	17
	+ 9	+ 7	− 6	+ 4	− 8	− 5	+ 6	− 9
2.	5	8	18	7	17	14	8	13
	+ 5	+ 9	− 9	+ 6	− 8	− 7	+ 7	− 6

3.	8 + 8 =	17 − 8 =	7 + 7 =	11 − 5 =
4.	6 + 5 =	12 − 6 =	9 + 8 =	13 − 7 =
5.	4 + 5 =	16 − 8 =	5 + 6 =	10 − 3 =
6.	7 + 8 =	15 − 7 =	9 + 7 =	10 − 9 =
7.	9 + 4 =	10 − 2 =	9 + 2 =	13 − 6 =
8.	9 + 3 =	14 − 7 =	9 + 6 =	10 − 4 =

9.	9 and . . . are 11.	7 and . . . are 16.
10.	5 and . . . are 14.	9 and . . . are 13.
11.	4 and . . . are 13.	9 and . . . are 12.
12.	9 and . . . are 15.	2 and . . . are 11.
13.	9 and . . . are 16.	9 and . . . are 14.
14.	3 and . . . are 12.	6 and . . . are 15.

15. Tell what number means 3 tens and 6 ones.

16. 70 means . . . tens and . . . ones.

17. 86 means . . . tens and . . . ones.

18. Ann has 3¢. How much more does she need to buy a paint brush for 12¢?

19. Bill wants a top that costs 10¢. He has 8¢. How many more cents does he need?

1. Ann has made 15 paper dolls. Betty has made 8. How many more dolls has Ann made than Betty?

2. The girls want 45 paper dolls all together. They have 23 made now. How many more do they need?

3. Tom paid 8¢ for crayons and 7¢ for paint. How much did he pay for both?

4. Tom had 25¢. If he spent 15¢ for crayons and paint, how much did he have left?

5. Jim paid 4¢ for an apple, 3¢ for an orange, and 3¢ for a plum. How much did all these things cost?

6. Alice is saving money for a book. She has 15¢. Her mother will give her 10¢ for washing the dishes. How much will she have then?

7. There are 27 children in our class. We have only 15 song books. How many more do we need so that each child will have a book?

8. Jim bought 2 bunches of carrots for his rabbits. There were 8 carrots in one bunch and 9 carrots in the other. How many carrots did Jim have?

9. We have 35 chairs in our room. We will get 22 more chairs for the party today. How many chairs will we have then?

10. Betty had 8 candles on her birthday cake. She blew out 5. How many candles were left burning?

11. Betty gave a balloon to each child at her party. She had 4 blue balloons, 4 red balloons, and 1 yellow balloon. How many balloons did she have?

12. How many are 3 pencils and 9 pencils?

1. Last Saturday 9 girls and 9 boys went to the zoo with Miss Ball. How many children all together went with Miss Ball?

2. The children wanted to see the seals eat fish. They saw the man throw fish and the seals catch them. One seal ate 9 fish and another seal ate 7 fish. How many fish did the two seals eat?

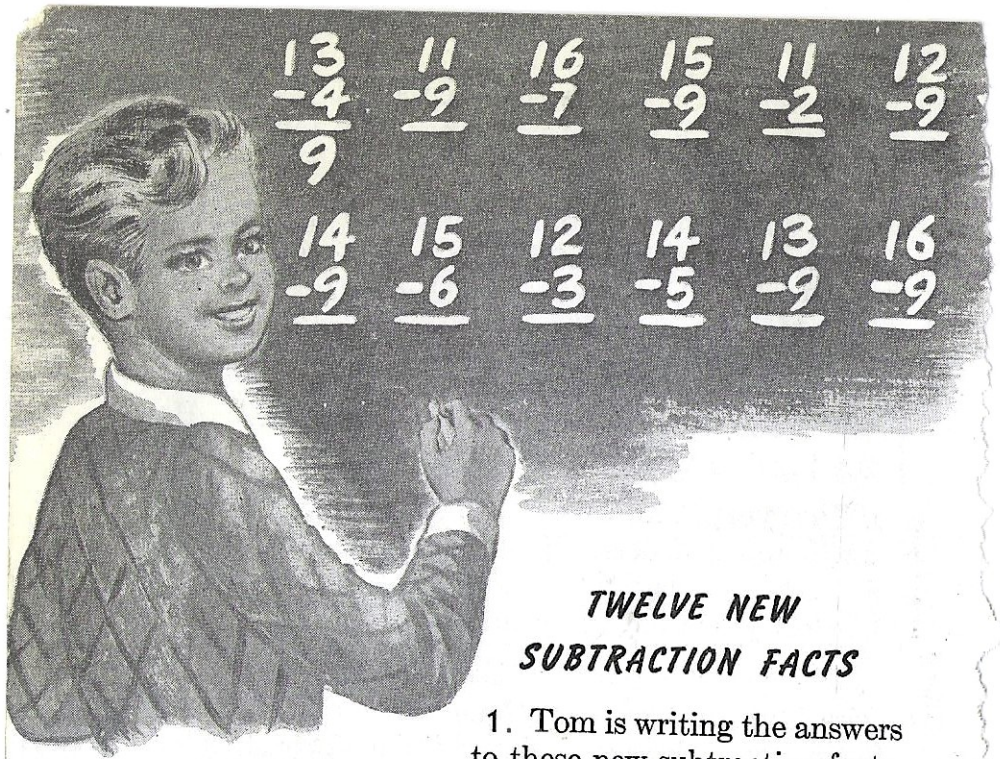
3. In the bird house the children saw 5 parrots with short tails and 9 parrots with very long tails. There were how many parrots in all?

4. In one part of the zoo they saw 17 monkeys. There were 9 monkeys eating. The others were sleeping. How many monkeys were sleeping?

5. Mary and Bob counted 13 deer in all in the deer park. Mary said, "Look, look, 4 of them are baby deer." Bob said, "The rest are big deer." How many big deer were there?

6. Last year there were only 7 deer in the deer park. Now there are 13 deer. How many more deer are there this year than last year? How many less deer were there last year than this year?

7. This year the zoo has 2 lions, 2 tigers, 2 elephants, 2 giraffes, and 2 zebras. Count these animals by 2's. How many of these animals are there all together?



TWELVE NEW SUBTRACTION FACTS

1. Tom is writing the answers to these new subtraction facts. If he does not know the answer to the second fact, he finds it like this: He puts 11 pencils on the table. Then he takes away 9 pencils. This shows him that 9 from 11 is . . .

2. Here is another way to find the answer to 9 from 11: Think "9 and . . . are 11, so 9 from 11 is . . ."

3. To find the answer to 7 from 16, draw 16 stars. Then cross out 7 stars. How many stars are not crossed out? This shows that 7 from 16 is . . . Tell another way to find the answer.

4. Give the answers to all the subtraction facts that Tom wrote on the board. Try to remember them.

Twelve new subtraction facts corresponding to the addition facts on pages 52 and 53.

1. Tom had 17 nuts in his pocket. He gave 9 nuts to the squirrels. How many nuts did Tom have left?

2. Jim had 16¢ when he went to the candy store. He spent 7¢. How much did he have left?

3. Bill had 9 chickens. His father gave him 3 more. How many chickens did Bill have then?

4. Jane has 9¢. She wants to buy a ball that costs 15¢. How many more cents does she need?

5. Joe had 12 candies. He gave 3 to Jim. How many candies did Joe have left?

Tell what numbers should be put in the spaces:

6. 2 and . . . are 11. 9 and . . . are 14.
7. 9 and . . . are 15. 3 and . . . are 12.
8. 8 and . . . are 17. 9 and . . . are 18.
9. 9 and . . . are 10. 7 and . . . are 16.

Say the answers:

10.	10 − 1	9 + 9	13 − 4	9 + 6	17 − 9	3 + 9	15 − 9	9 + 8
11.	9 + 5	13 − 9	1 + 9	14 − 5	9 + 7	12 − 9	9 + 2	4 + 9
12.	18 − 9	12 − 3	7 + 9	5 + 9	15 − 6	11 − 9	6 + 9	17 − 8
13.	16 − 7	11 − 2	8 + 9	9 + 4	14 − 9	10 − 9	9 + 3	16 − 9

1. John weighs 91 pounds and his brother weighs 125 pounds. How many less pounds does John weigh than his brother?

2. Tom sold 92 papers and Joe sold 85 papers. How many papers did the two boys sell?

3. Jack has 60 marbles now. He would like to have 100 marbles all together. How many more marbles does Jack need to get?

Subtract these numbers and check the work:

4.	138	179	165	143	116	169
	43	87	94	72	93	85
5.	152	188	157	144	119	136
	71	94	91	50	23	95
6.	148	124	179	152	164	137
	95	32	95	82	93	43
7.	119	136	185	163	147	106
	94	92	90	72	75	30
8.	157	103	148	139	118	144
	72	81	56	77	50	91
9.	179	167	119	157	105	136
	88	86	66	64	45	64
10.	165	134	128	178	124	159
	71	64	97	92	60	83
11.	150	115	157	109	131	102
	90	22	63	51	71	62

Add these numbers and check the work:

1.	3	7	2	1	6	3	5	4
	0	1	2	7	2	6	4	5
	7	7	3	2	7	1	2	1
2.	6	8	7	2	1	6	5	8
	3	1	2	3	1	3	2	1
	3	7	4	6	7	4	7	8
3.	4	2	6	5	8	5	7	3
	2	4	3	1	1	4	2	6
	7	4	6	5	6	5	7	3
4.	4	6	4	7	9	7	2	6
	5	1	3	1	0	2	4	3
	4	6	6	8	7	5	5	2

Find the sums. Check the work:

5.	72	94	83	94	25	65	86
	92	35	74	42	91	73	93
6.	61	75	97	64	72	53	72
	53	64	52	94	83	93	75
7.	92	95	61	33	34	94	23
	24	82	67	72	91	93	81
8.	93	46	41	81	93	11	52
	65	92	68	85	76	92	67
9.	72	94	68	80	51	70	67
	36	80	71	23	51	87	41

ADDING 8 TO A NUMBER

1. Here are 8 stars and 5 stars.

★★★★★★★★ ★★★★★

Put 2 of the 5 stars with the 8 stars like this:

★★★★★★★★★★ ★★★

You see 10 stars and 3 stars. This shows that 8 and 5 are the same as 10 and 3, or ... How many are 5 and 8?

To add 8 and 5, take 2 from 5, which gives 3. Then add 10, which gives 13.

$$\begin{array}{r} 8 \\ 5 \\ \hline 13 \end{array} \qquad \begin{array}{r} 5 \\ 8 \\ \hline 13 \end{array}$$

2. Show that 8 and 6 make 10 and ..., or ... How many are 8 and 6? How many are 6 and 8?

$$\begin{array}{r} 8 \\ 6 \\ \hline 14 \end{array} \qquad \begin{array}{r} 6 \\ 8 \\ \hline 14 \end{array}$$

3. Show that 8 and 4 make 10 and ..., or ... How many are 8 and 4? How many are 4 and 8?

$$\begin{array}{r} 8 \\ 4 \\ \hline 12 \end{array} \qquad \begin{array}{r} 4 \\ 8 \\ \hline 12 \end{array}$$

4. Show that 8 and 3 make 10 and ..., or ... How many are 8 and 3? How many are 3 and 8?

$$\begin{array}{r} 8 \\ 3 \\ \hline 11 \end{array} \qquad \begin{array}{r} 3 \\ 8 \\ \hline 11 \end{array}$$

5. How many are 8 and 7? How many are 8 and 8?

Study the new facts above. Then give the sums:

6.	8	8	8	8	8	8	8	8	8
	3	7	9	5	6	2	4	8	1
7.	4	6	3	5	9	7	1	2	8
	8	8	8	8	8	8	8	8	8

Eight new addition facts having 8 as one addend.

1. A quick way to add 8 and 6 is like this: Take 2 from 6 and think "4." Then say "14." What is a quick way to add 8 and 4?

Add these numbers:

2.	4	8	3	9	3	8	9	8	5
	8	5	9	6	8	0	9	6	9
3.	6	8	8	9	9	4	2	9	8
	9	1	4	2	8	9	8	7	8
4.	0	8	9	8	1	9	9	7	5
	9	7	8	5	8	9	5	8	8
5.	8	9	6	7	2	9	8	9	4
	3	1	8	9	9	4	9	3	8

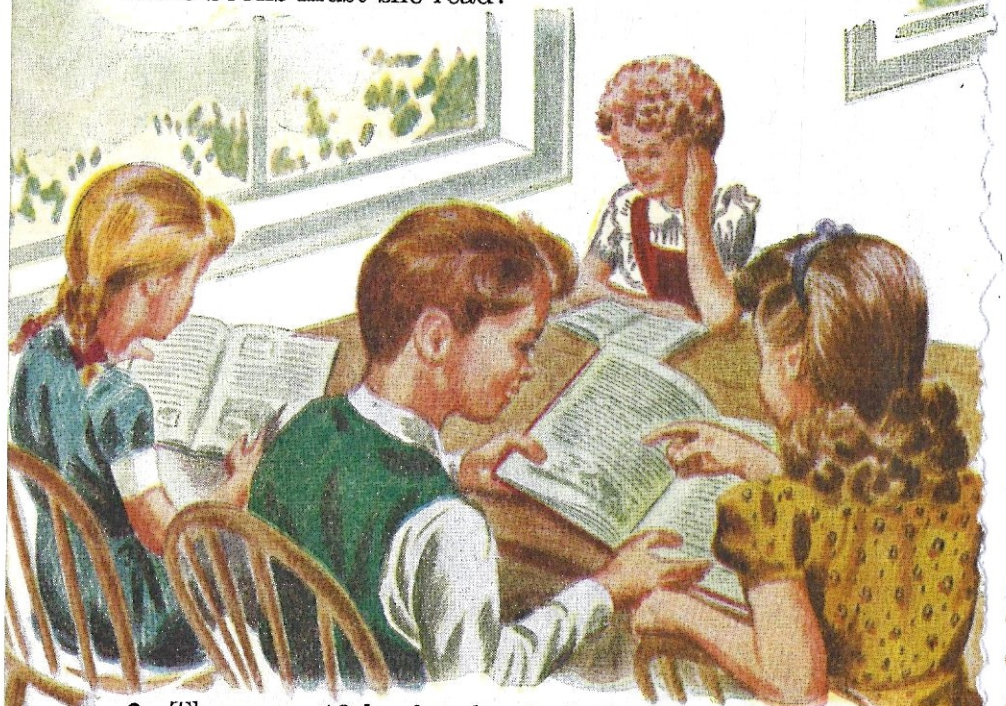
Tell the numbers that go in the spaces:

6. 8 and ... are 13, so 8 from 13 is ...
7. 8 and ... are 12, so 8 from 12 is ...
8. 8 and ... are 14, so 8 from 14 is ...
9. 8 and ... are 11, so 8 from 11 is ...
10. 6 and ... are 14, so 6 from 14 is ...
11. 3 and ... are 11, so 3 from 11 is ...
12. 5 and ... are 13, so 5 from 13 is ...
13. 4 and ... are 12, so 4 from 12 is ...
14. 9 and ... are 17, so 9 from 17 is ...
15. 4 and ... are 13, so 4 from 13 is ...
16. 7 and ... are 15, so 7 from 15 is ...

THE CHILDREN LIKE TO READ

1. In the library Joe read 14 pages in his book and Ann read 8 pages in her book. How many more pages did Joe read than Ann?

2. Alice wants to read 11 books before Christmas this year. She has read 8 books now. How many more books must she read?



3. There are 13 books about airplanes in the library. Tom has read 5 of them. How many airplane books are left for Tom to read?

4. The school library has just bought 12 new books about animals. The children have taken 4 of these books home to read. How many of these new books are left in the library?

5. Mary read 11 books last month and 3 books this month. How many more books did she read last month than this month?

6. At home Dick has 8 books on Indians. The library has 12 books on Indians. How many more books on Indians has the library than Dick?

7. The library has 13 books about birds. 8 of them are new books. How many of the books are old?

8. The library had 14 books about dogs but 6 of them have been lost. How many books about dogs are there in the library now?

9. Learn these new subtraction facts.

11	11	12	12	13	13	14	14
− 3	− 8	− 4	− 8	− 5	− 8	− 6	− 8
8	3	8	4	8	5	8	6

Eight new subtraction facts corresponding to the addition facts on page 64.

In each problem first tell whether you add or subtract:

1. Mary's new book has 155 pages. She has read 80 pages of it. How many pages has she left to read?

2. Our class used 12 sheets of yellow paper and 24 sheets of green paper to make flowers for a class play. How many sheets of paper did we use?

3. The boys sold 85 tickets for the play and the girls sold 73. How many tickets did all the children sell? How many more tickets did the boys sell than the girls?

4. Jack had 85 stamps. Today Uncle Ned gave him 30 more stamps. How many stamps has Jack now?

5. Miss Ball wants to give each child in the class a sheet of drawing paper. She should have 46 sheets of paper but she has only 36 sheets. How many more sheets of drawing paper does she need to get?

6. Tom had 48¢. He spent 25¢ for some stamps. How many cents did he have left?

Subtract these numbers:

7.	14 − 6	11 − 3	17 − 8	13 − 5	15 − 7	10 − 8	12 − 4	16 − 8
8.	9 − 8	14 − 8	10 − 2	15 − 8	12 − 8	17 − 9	13 − 8	11 − 8
9.	16 − 8	13 − 5	12 − 8	14 − 6	17 − 8	15 − 7	11 − 3	13 − 8
10.	12 − 4	11 − 8	13 − 5	14 − 8	12 − 8	11 − 3	14 − 6	12 − 4

Add these numbers and check:

1.	32	84	85	33	62	76	84
	87	94	43	94	85	63	55
2.	54	86	63	81	82	63	45
	53	61	56	38	74	93	82
3.	82	65	62	74	51	23	88
	46	64	83	92	86	85	51
4.	53	81	56	87	41	97	31
	82	37	62	61	84	62	85
5.	90	62	45	91	66	24	81
	30	42	91	83	70	91	82

Subtract these numbers and check:

6.	139	117	156	149	137	118
	97	32	83	62	45	83
7.	148	189	138	167	108	145
	85	94	56	74	74	85
8.	127	168	145	119	139	168
	43	92	62	33	85	87
9.	155	109	128	146	117	146
	73	36	81	54	86	92
10.	104	146	173	119	137	128
	83	75	91	58	67	90

1. Mary's mother made 12 cup cakes. 8 of them were chocolate cakes. The rest were white cakes. How many white cakes were there?

In the picture above, you can find the number of white cakes by counting. A shorter way to find the number of white cakes is to subtract 8 from 12. How many are 8 from 12?

$$\begin{array}{r} 12 \\ -\ 8 \\ \hline \end{array}$$

2. Tom has 9 marbles. 3 of them are red. The others are blue. How many blue marbles has Tom?

3. Joe lives on a farm. He has 7 pets. There are 4 kittens. The rest of his pets are puppies. How many puppies has Joe?

4. On Saturday Jack caught 12 fish in all. There were 3 big fish. The others were little fish. How many little fish did Jack catch?

5. Jane has 17 apples. 9 apples are red. The other apples are green. How many green apples are there?

6. Ann cut out 15 paper dolls. 7 of them were boy dolls and the rest were girl dolls. How many girl dolls did she have?

7. There are 29 children in our class. 15 of them are boys. How many girls are there?

If you know the whole number and one of its parts, you subtract to find the other part of the number.

1. On Saturday the children had some races in the park. In the toy boat race there were 14 boats in all. Only 5 of them sailed all the way across the pond. How many boats did not finish the race?

2. There were 15 children in the bicycle race. There were 6 girls in the race. How many boys were there?

3. The next race had 12 children on roller skates. When they came to the hill 4 children fell down and had to stop. How many children finished the race?

4. In the toy airplane race 14 airplanes started to fly across the lake, but 9 of them fell in the water. How many airplanes flew across the lake?

5. There were 17 children ready to show how fast they could run. There were 9 children in the short race. The others were in the long race. How many were in the long race?

MORE FACTS TO LEARN

1. These addition and subtraction facts are the only ones you have not yet learned. Try to remember them:

7	4	11	11	7	5	12	12
+ 4	+ 7	− 7	− 4	+ 5	+ 7	− 7	− 5
11	11	4	7	12	12	5	7

2. Alice picked 7 yellow flowers and 5 white flowers. How many flowers did Alice pick?

3. Mary's mother had 12 eggs. She used 5 of them for lunch. How many eggs did she have left?

4. Joe had 7¢. He earned 4¢ after school. How many cents did Joe have then?

5. This morning Tom read 5 pages in his book. This afternoon he read 7 more pages. How many pages in all did Tom read today?

6. Bill needs 12 nails for a box he is making. He has 7 nails now. How many more nails does he need?

7. Jack's father gave him 11 pennies. Jack bought a pad for 4¢. How many pennies did he have left?

8. Jane had 5 pennies. Her mother gave her 7 pennies. How many pennies did Jane have then?

9. Tom had 11 sheets of red paper. He used 7 sheets. How many sheets of red paper did he have left?

10. 4 and 7 are . . . 7 and 4 are . . .

11. 7 and 5 are . . . 5 and 7 are . . .

12. 4 from 11 is . . . because 4 and . . . are 11.

13. 5 from 12 is . . . because 5 and . . . are 12.

Four new addition facts and the corresponding four subtraction facts.

Try to give all the answers without a mistake:

1.	3	9	7	1	6	8	0	2	7	2
	8	3	0	4	9	3	1	3	8	1
2.	0	8	2	1	8	9	0	3	4	9
	5	9	5	6	7	7	4	7	3	9
3.	9	1	6	7	4	0	2	8	4	3
	1	3	4	5	1	9	0	2	5	1
4.	1	2	6	1	0	6	1	4	1	3
	0	2	6	2	7	1	1	7	5	6
5.	8	9	7	2	0	1	7	9	5	8
	4	5	3	9	0	9	1	8	2	5
6.	4	5	9	5	2	6	3	0	7	5
	2	8	0	5	8	2	3	2	7	7
7.	0	2	6	3	5	5	8	5	7	3
	3	6	3	4	9	0	6	3	4	9
8.	0	1	5	4	2	4	4	5	3	6
	6	8	1	9	4	6	8	4	0	7
9.	6	7	4	5	1	0	4	3	9	7
	8	2	0	6	7	8	4	2	4	9
10.	8	8	2	9	3	6	7	8	9	6
	1	0	7	6	5	0	6	8	2	5

To THE TEACHER. This page is to be used as a diagnostic test. For suggestions concerning the administration of this test, see pages 11 and 27.

Try to give all the answers without a mistake:

1.	11	3	10	4	14	10	13	4	6	8
	5	2	5	1	5	8	5	0	2	4
2.	8	13	7	16	9	8	6	9	11	6
	1	4	3	7	6	3	0	4	2	3
3.	18	16	13	15	12	11	9	10	13	7
	9	8	8	9	9	6	2	3	7	6
4.	4	12	7	4	8	6	10	11	9	5
	4	5	5	3	5	1	4	3	0	4
5.	12	6	7	12	11	7	8	0	7	5
	8	6	1	4	8	7	2	0	2	2
6.	17	8	16	9	5	11	7	10	12	6
	8	7	9	1	3	7	0	6	3	5
7.	8	17	8	15	10	10	9	1	13	11
	0	9	6	8	1	2	3	1	6	9
8.	9	2	14	9	12	5	3	15	10	2
	8	1	8	5	6	1	0	6	9	2
9.	14	4	7	15	2	9	3	8	11	1
	9	2	4	7	0	7	1	8	4	0
10.	14	3	14	6	13	5	10	12	9	5
	6	3	7	4	9	5	7	7	9	0

To the Teacher. This page is to be used as a diagnostic test. For suggestions concerning the administration of this test, see pages 11 and 27.

1. Bill paid 25¢ for a brush and 20¢ for a comb for his dog. How much did Bill pay for these things?

2. Bill has saved 30¢. How much more does he need to make 45¢?

3. Jack paid 25¢ for a dog collar. Bill paid 47¢ for one. How much less did Jack pay than Bill?

4. Dick paid 38¢ for a bird bath and some bird food. The bird bath cost 23¢. What did the bird food cost?

5. Bob bought a top for 6¢, a pencil for 2¢, and a balloon for 7¢. How much did all these things cost?

6. Jane baked 15 sugar cookies today. The family ate 9 for lunch. How many cookies were left?

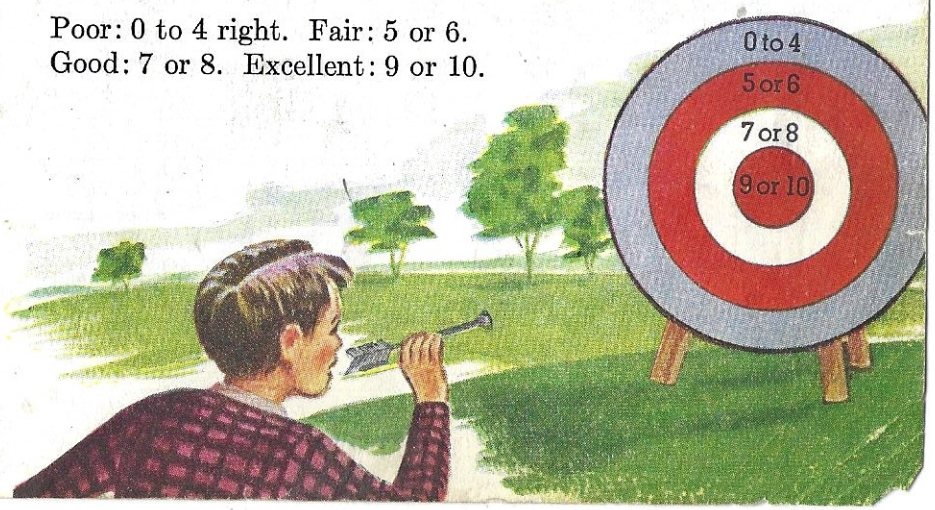
7. Ann saw 9 birds on the ground and 6 birds in a tree. How many birds did Ann see?

8. Betsy had 15¢. Her mother gave her 12¢. Did Betsy have enough money then to buy a book for 23¢?

9. Joe has 12 pencils. There are 8 red ones. The rest are blue. How many blue pencils has he?

10. Tom sold 39 tickets for the play. Jim sold 28. How many less tickets did Jim sell than Tom?

Poor: 0 to 4 right. Fair: 5 or 6.
Good: 7 or 8. Excellent: 9 or 10.



1. Count by 5's to 100; count by 10's to 100.
2. How many cents do 2 dimes and 1 nickel equal?
3. How many cents do 1 dime and 3 pennies equal?
4. How many cents do 1 nickel and 1 cent equal?
5. How many cents do 1 dime and 1 nickel equal?

Add these numbers and check:

6.	3	6	4	6	5	2	4	2
	2	0	4	3	3	7	5	6
	4	7	5	2	3	1	2	3
7.	81	62	34	35	76	40	28	77
	34	66	93	74	53	86	91	92
8.	45	36	86	92	91	62	42	64
	23	62	21	65	26	87	42	52
9.	54	83	40	81	73	95	74	53
	75	53	64	85	44	90	84	65

Subtract these numbers and check:

10.	86	85	97	169	148	136	106
	56	73	24	81	95	61	72
11.	69	86	79	137	114	107	155
	34	44	33	82	51	47	80
12.	72	58	97	154	176	129	139
	22	36	76	62	95	69	95
13.	97	80	79	136	183	149	164
	75	20	36	50	92	68	74

If you miss more than one example in any row, turn to the Practice Pages for that row.

								PRACTICE PAGES
Add these numbers:								
1.	7	9	6	5	9	7	6	37, 41
	7	8	7	6	9	8	6	
2.	4	8	9	6	9	3	7	55, 65
	8	7	5	8	4	8	9	
3.	4	1	8	2	5	6	2	48, 63
	3	3	1	4	0	3	1	
	2	6	6	5	4	4	7	
4.	83	93	62	95	86	94		49, 69
	75	92	47	30	43	74		
Subtract these numbers:								
5.	16	13	17	11	18	15		38, 44
	8	6	9	5	9	7		
6.	16	14	11	14	11	12		61, 68
	7	9	2	6	8	4		
7.	106	148	117	186	135			50, 62
	92	73	64	96	60			
8.	138	164	149	117	146			69
	94	70	52	82	84			
9.	123	118	129	115	127			69, 72
	72	46	54	75	93			

Diagnostic test.

CHAPTER THREE

Adding and Subtracting Larger Numbers

LEARNING MORE ABOUT NUMBERS

1. Numbers on houses show the postman where to leave the letters he carries. Today he is leaving a letter at 1856 Lake Street. This number means 1 thousand, 8 hundreds, 5 tens, and 6 ones. You read it *one thousand, eight hundred fifty-six*. Two shorter ways of reading 1856 are *eighteen hundred fifty-six* and *eighteen fifty-six*.

2. The number 1729 means 1 thousand, 7 hundreds, 2 tens, and 9 ones. The number 1054 means 1 thousand, 0 hundreds, 5 tens, and 4 ones. You read it *one thousand fifty-four*. Tell two other ways to read 1054. The number 1009 means 1 thousand, 0 hundreds, 0 tens, and 9 ones. You read it *one thousand nine*.

3. Read this: Jane was born in 1937 and Joe was born in 1936. They live at 1579 Water Street. The house where they live was built in 1920.

LARGE NUMBERS

Read these numbers:

1. 1732	1506	1007	1083	1371
2. 1409	1297	1643	1308	1840

Write these numbers in figures:

3. Sixteen twenty — One thousand five
4. One thousand fifteen — Seventeen forty
5. Eighteen hundred nine — One thousand eleven
6. Fourteen hundred ninety-two
7. One thousand five hundred twenty
8. Joe's grandfather was born in 1889. Tell three ways to read 1889.
9. Give three ways to read each of these years: 1776, 1938, 1812, 1909, 1066, 1230.
10. Write the year in which you were born.
11. Write the present year and read it two ways.
12. 1000 means . . . thousand, . . . hundreds, . . . tens, and . . . ones.

Tell what each of these numbers means:

13. 89	500	1625	1220	1003
14. 60	704	1944	1408	1010

15. Count by 100's to 900. What is the next hundred above 900. How do you write it?
16. 10 hundred is the same as 1 thousand.

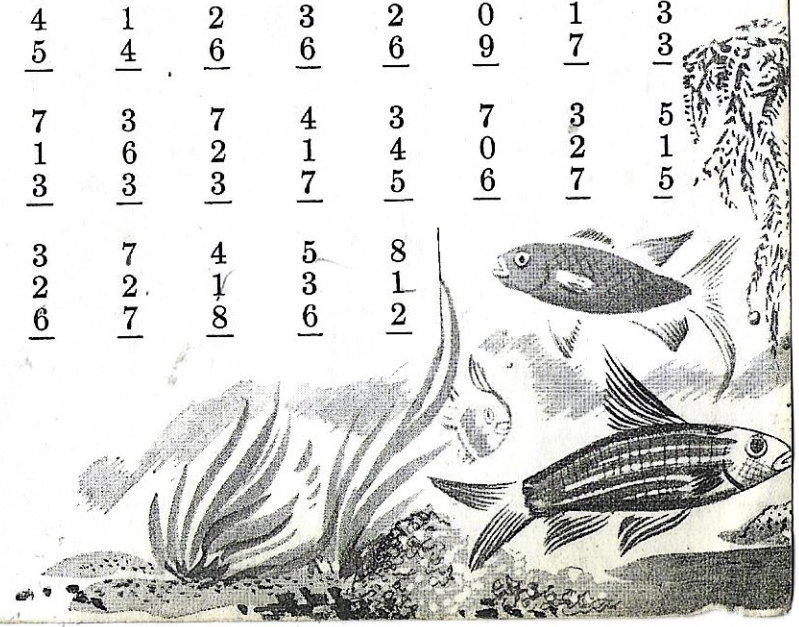
1 thousand = 10 hundred

ADDING COLUMNS

1. Today the balloon man has 5 red balloons, 4 yellow balloons, and 5 green balloons to sell. How many balloons has he in all?
2. Ann had 4 goldfish. She bought 3 more and Bob gave her 2. How many goldfish had Ann then?

Add. Begin at the bottom of each column and add up. Check by adding down:

3.	2	7	6	5	3	5	4	3	5
	2	1	1	2	6	3	5	6	2
	7	5	8	7	2	4	4	2	5
4.	4	6	3	3	4	2	8	7	2
	3	2	1	4	5	6	1	2	5
	6	7	7	4	2	3	3	4	4
5.	4	9	2	6	2	8	6	7	7
	1	0	1	2	7	1	2	1	2
	6	4	8	3	2	5	5	4	5
6.	3	2	8	7	6	4	7	5	5
	3	4	1	2	3	2	0	1	3
	6	5	4	6	6	6	9	7	3
7.	5	7	3	7	4	3	7	3	5
	1	1	6	2	1	4	0	2	1
	6	3	3	3	7	5	6	7	5
8.	3	3	7	4	5	8			
	1	2	2	1	3	1			
	8	6	7	8	6	2			



HOBBIES

The children in Miss Ball's room are to have a hobby show. Each child has brought something that he has made or collected.

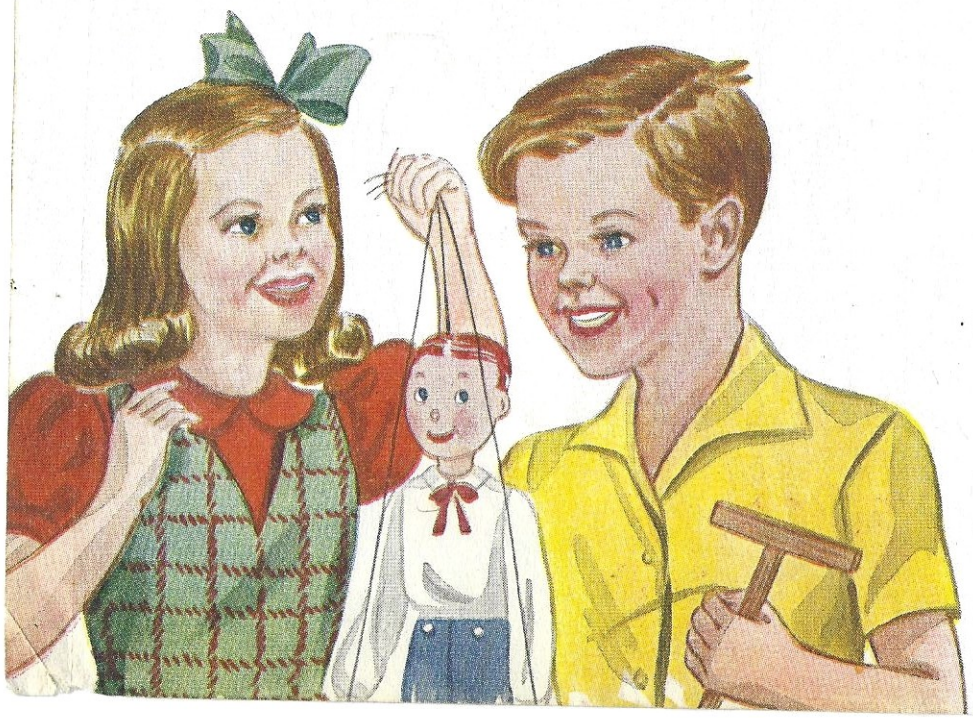
1. Tom collects airplane models. He has 4 fighters, 3 bombers, and 5 scout planes. How many airplane models has Tom all together?

2. Ann's hobby is dolls. She has 22 dolls from other countries and 13 dolls from this country. How many dolls has Ann in all?

3. Mary also collects dolls. She has 24 dolls in all. How many more dolls has Ann than Mary?

4. Jack makes bird houses. He made 10 of them in school and 18 at home. How many bird houses did Jack make?

5. Jack gave away 16 of the bird houses he made. How many does he have left?



6. Betty and Fred make puppets for a hobby. They have made 6 boys, 3 girls, and 2 men. How many puppets have they made?

7. Peter has 158 stamps. He has 64 United States stamps and the rest are from other countries. How many stamps from other countries has Peter?

8. Jane collects buttons. She has 45 old buttons and 24 new buttons. How many buttons has she?

9. Tell the class about your hobby and try to make a problem about it.

1. Jim sold 24 papers yesterday and 30 papers today. How many papers did he sell in the two days?

2. Bob sold 32 papers yesterday and 33 papers today. How many papers did Bob sell?

3. In two days Jim sold 54 papers and Bob sold 65 papers. How many papers did the two boys sell all together?

Add these numbers and check the work:

4.	98	43	51	63	90	73	41	65
	81	82	37	66	19	33	55	80
5.	74	52	83	84	36	95	61	42
	34	45	91	32	53	92	58	97
6.	85	52	40	52	66	11	92	71
	41	62	36	83	21	92	74	87
7.	29	31	77	44	95	35	81	25
	60	86	92	61	40	44	51	84
8.	62	23	41	77	76	53	71	36
	41	74	94	50	13	75	23	62
9.	48	65	82	26	54	71	94	36
	40	92	66	83	73	76	24	51
10.	43	83	92	31	55	26	32	87
	70	71	52	38	53	90	74	81
11.	90	22	74	63	31	70	54	80
	39	35	40	72	95	60	92	22

1. One summer Joe's father took him to New York. They rode 325 miles to go there and 354 miles to come back. How many miles did they ride in all?

Write 354 under 325 and add up like this:
Ones: Add 4 and 5, thinking "4, 9." Write 9.
Tens: Add 5 and 2, thinking "5, 7." Write 7.
Hundreds: Add 3 and 3, thinking "3, 6." Write 6.
The sum is 679. Joe rode 679 miles in all.
Check by adding down.

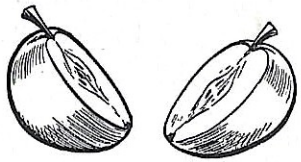
$$\begin{array}{r} 325 \\ 354 \\ \hline 679 \end{array}$$

2. In Hill School there are 410 children. In Park School there are 528 children. How many children are there in both schools?

Add these numbers and check the work:

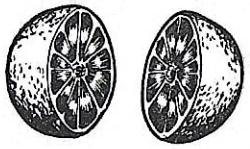
3.	123	243	440	453	152	352
	541	732	125	416	732	426
4.	117	263	162	761	431	228
	412	125	833	113	526	941
5.	425	143	430	526	521	175
	654	313	446	861	325	420
6.	522	161	903	103	573	530
	217	622	345	761	706	120
7.	273	823	450	953	190	172
	213	414	235	240	100	614
8.	204	662	614	645	106	253
	300	916	323	512	372	511

Adding three-figure numbers, no carrying.



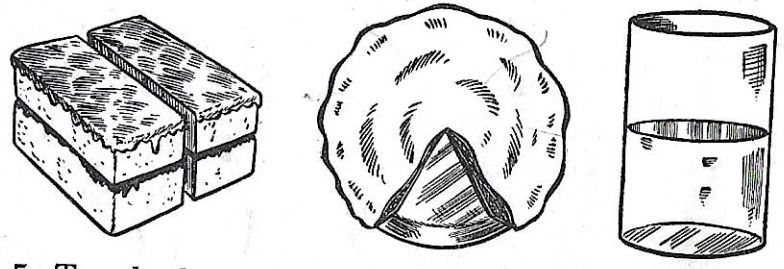
1. Joe cuts an apple into 2 pieces of the same size. Each piece is *one half* of the apple. There are 2 halves in a whole apple.

2. Mary has an orange. She cuts it into 2 pieces of the same size. These 2 pieces are equal and each piece is *one half* of the orange. You write one half like this: $\frac{1}{2}$.



3. Betty bought a half pound of butter this morning and another half pound this afternoon. How much butter all together did Betty buy today?

4. Is the cake cut into halves? Is the pie cut into halves? Is the glass half full?

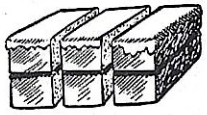


5. Tom broke a stick of candy into 2 parts like this:

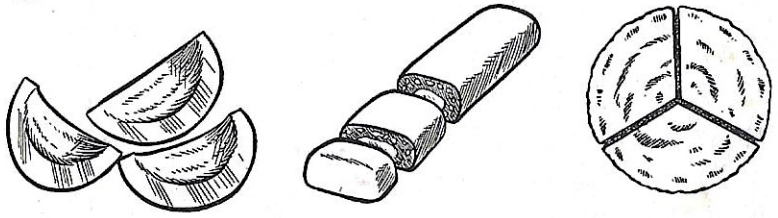
Tom said, "I will give the big half to Mary. I will keep the little half." Tell why Tom is wrong.

Both halves of anything are the same size.

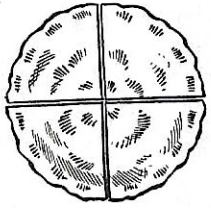
1. Tom's mother baked a cake for him. He cut it into 3 equal pieces. Each piece is *one third* of the cake. You write *one third* like this: $\frac{1}{3}$.



2. Which of these things are cut into *thirds?*



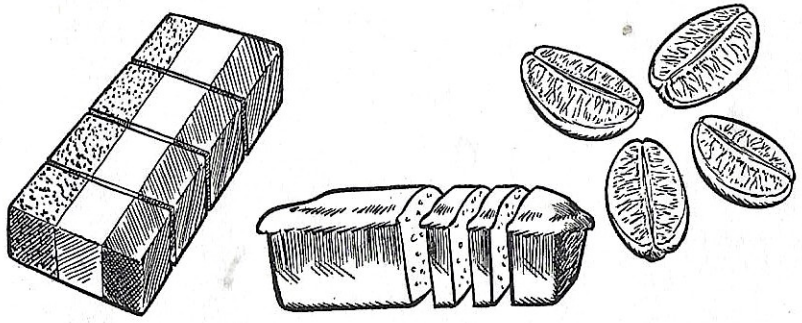
3. This pie is cut into 4 equal pieces. Each piece is *one fourth* or *one quarter* of the pie. You write *one fourth* like this: $\frac{1}{4}$.



4. Draw a picture showing a stick of candy cut into quarters. Are the quarters all the same size? How many quarters are there in a whole stick of candy?

5. Draw a glass that is a quarter full of water.

6. Which of these things are divided into *fourths?*



DO YOU ADD OR SUBTRACT?

First tell whether you add or subtract. Then work the problem:

1. Bill got a book for his birthday. The book has 155 pages. Bill has read 63 pages. How many more pages has he to read?

2. Mary has two new books. One of these books has 118 pages and the other has 141 pages. How many pages in all has Mary to read?

3. Bob had 42 stamps. His uncle gave him 25. How many stamps did Bob have then?

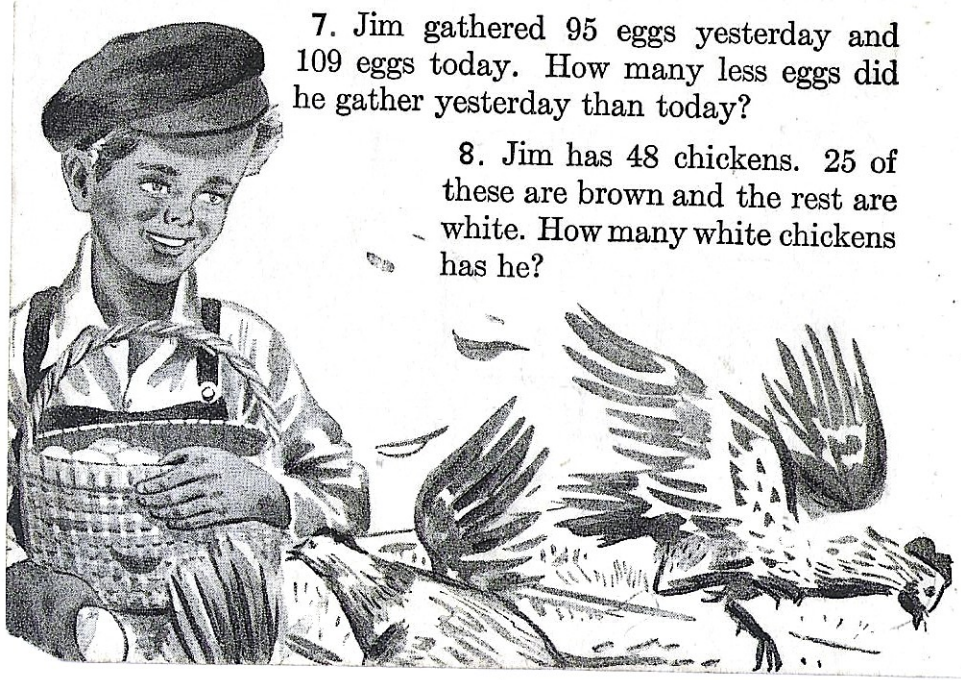
4. There are 38 children in one third grade class. Only 15 of them are boys. How many girls are there in the class?

5. The girls in our class sold 64 tickets and the boys sold 53 tickets. How many tickets did our class sell all together?

6. Jim's father had 225 chickens. He bought 130 more. How many chickens did he have then?

7. Jim gathered 95 eggs yesterday and 109 eggs today. How many less eggs did he gather yesterday than today?

8. Jim has 48 chickens. 25 of these are brown and the rest are white. How many white chickens has he?



1. Bill had 57¢ and spent 45¢ for a book. How many cents did he have left?

2. The fourth grade class had 135 tickets to sell. Yesterday they sold 93 tickets. How many tickets have they left to sell?

3. The boys sold 58 tickets and the girls sold 35. How many less tickets did the girls sell than the boys?

Subtract these numbers and check the work:

4.	94	49	86	125	189	138	107
	71	36	45	54	90	86	91
5.	74	63	59	142	109	156	117
	32	22	24	71	18	73	35
6.	83	94	76	128	147	129	105
	71	20	44	95	56	71	61
7.	56	98	76	139	126	158	128
	31	52	60	53	32	80	42
8.	98	87	89	114	146	109	163
	14	33	13	82	95	47	71
9.	63	97	86	166	108	146	167
	42	54	13	91	33	62	80
10.	88	79	57	159	125	157	137
	61	26	35	68	80	95	44
11.	57	88	97	109	137	116	138
	22	65	41	72	93	54	63

1. Today Tom counted 655 automobiles. There were 430 passenger cars and the rest were trucks. How many trucks were there?

The teacher will tell you which method to use when you subtract. Do not learn both methods.

Additive Method. *Ones:* Think "0 and **5** are 5." Write 5. *Tens:* Think "3 and **2** are 5." Write 2. *Hundreds:* Think "4 and **2** are 6." Write 2.

$$\begin{array}{r} 655 \\ 430 \\ \hline 225 \end{array}$$

The answer is 225. How many trucks were there?

To check, add 225 and 430, beginning at the bottom and adding up. Think "5 + 0 = 5; 2 + 3 = 5; 2 + 4 = 6."

Take-Away Method. *Ones:* Think "0 from 5, **5**." Write 5. *Tens:* Think "3 from 5, **2**." Write 2. *Hundreds:* Think "4 from 6, **2**." Write 2.

$$\begin{array}{r} 655 \\ 430 \\ \hline 225 \end{array}$$

The answer is 225. How many trucks were there?

To check, add 225 and 430, beginning at the bottom and adding up. Think "5 + 0 = 5; 2 + 3 = 5; 2 + 4 = 6."

Subtract. Check the answers by adding up:

2.	897 − 742	478 − 336	749 − 625	637 − 315	489 − 137	755 − 424
3.	868 − 528	945 − 241	686 − 520	892 − 431	639 − 126	935 − 425
4.	469 − 148	786 − 653	695 − 562	287 − 124	868 − 613	357 − 143
5.	479 − 212	648 − 204	575 − 241	579 − 125	975 − 353	744 − 123

Subtracting three-figure numbers, no carrying or borrowing.

In the problems on this page no questions have been asked. Make up a good question for each problem, using all the facts in the problem. Then find the answer to your question:

1. Jane made 36 jelly sandwiches and 12 meat sandwiches for the party.

A good question would be, "How many sandwiches of both kinds did Jane make?" Another good question would be, "How many more jelly sandwiches than meat sandwiches did Jane make?" Can you make up another good question?

2. Peggy made 24 sandwiches for the party. 12 of them were made of brown bread and the rest were made of white bread.

3. Betty brought 25 sugar cookies and 24 chocolate cookies to the party.

4. Mary saved 65¢. She spent 35¢ for a doll.

5. Mother gave Joe 43¢ and Father gave him 55¢.

6. Joe wants to buy a game for 75¢ and a book about airplanes for 24¢.

7. Jack has 88¢ in his bank. He takes out 25¢ to buy some paper and pencils for school.

8. In our class there are 38 children. 18 are boys and the others are girls.

9. Alice weighed 81 pounds last year. Now she weighs 91 pounds.

10. Bill has read 73 pages of his book. There are 155 pages in the book.

11. Bob bought 32 stamps. Then his father gave him 15 stamps for his birthday.

1. Ann had 25¢. She spent 20¢ for some pencils. How many cents did Ann have left?

In this example you get 0 when you subtract 2 from 2, but you do not write 0 in the answer because there are no more numbers at the left to be subtracted. Ann had 5¢ left.

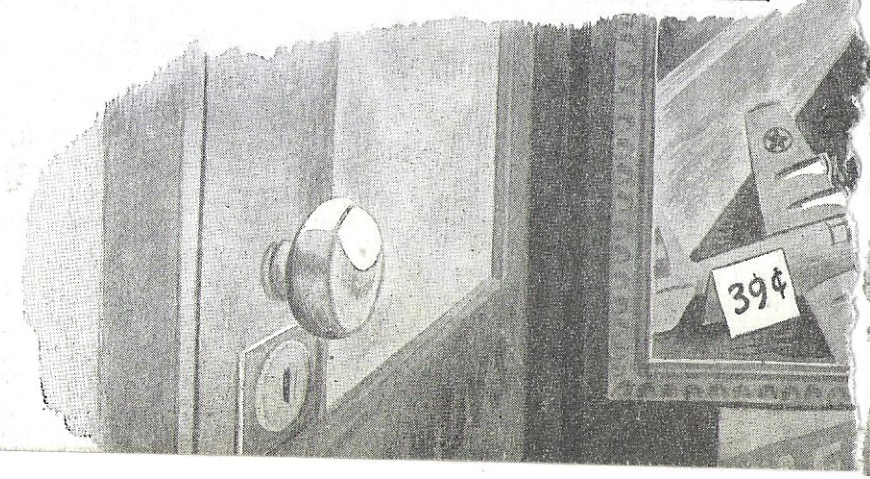
$$\begin{array}{r} 25 \\ \underline{20} \\ 5 \end{array}$$

2. Here are other subtraction examples with their answers. Study them carefully:

67	58	385	728	246	497
63	5	64	4	214	492
4	53	321	724	32	5

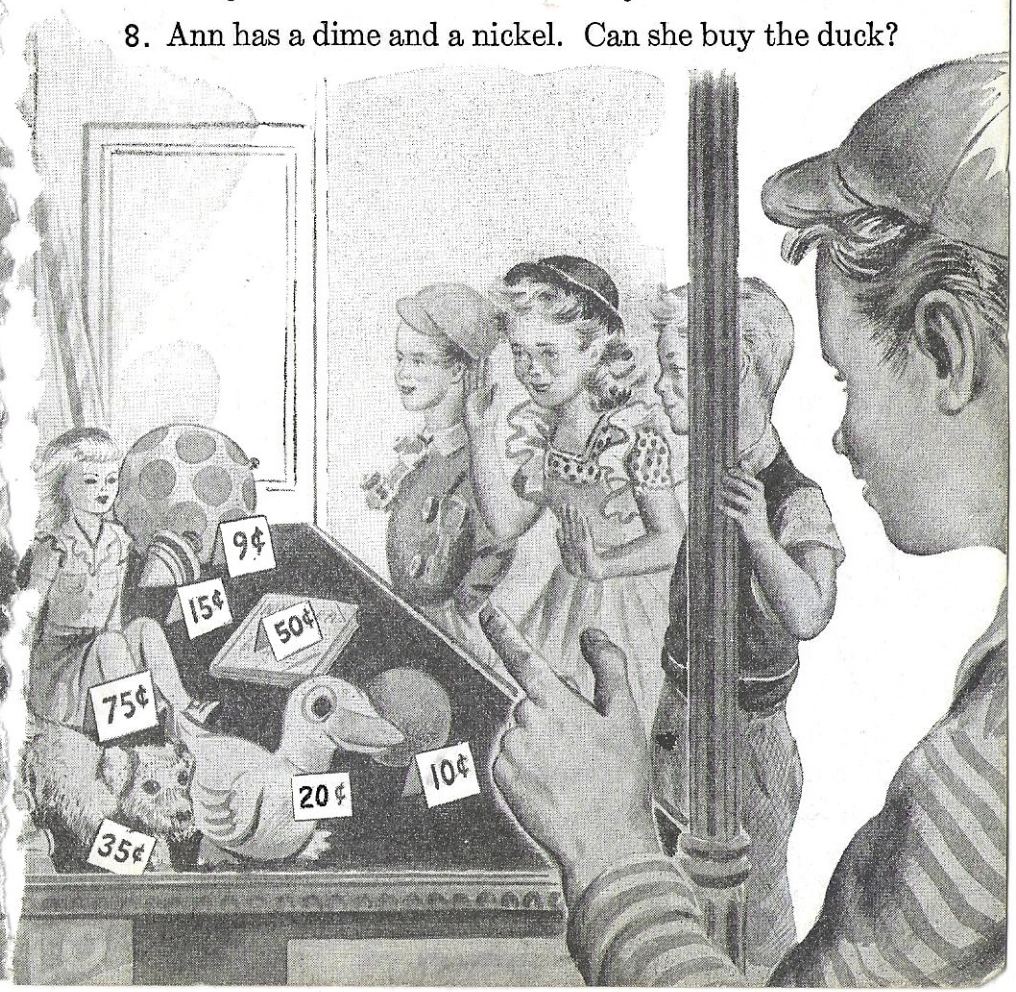
Subtract these numbers. Check by adding up:

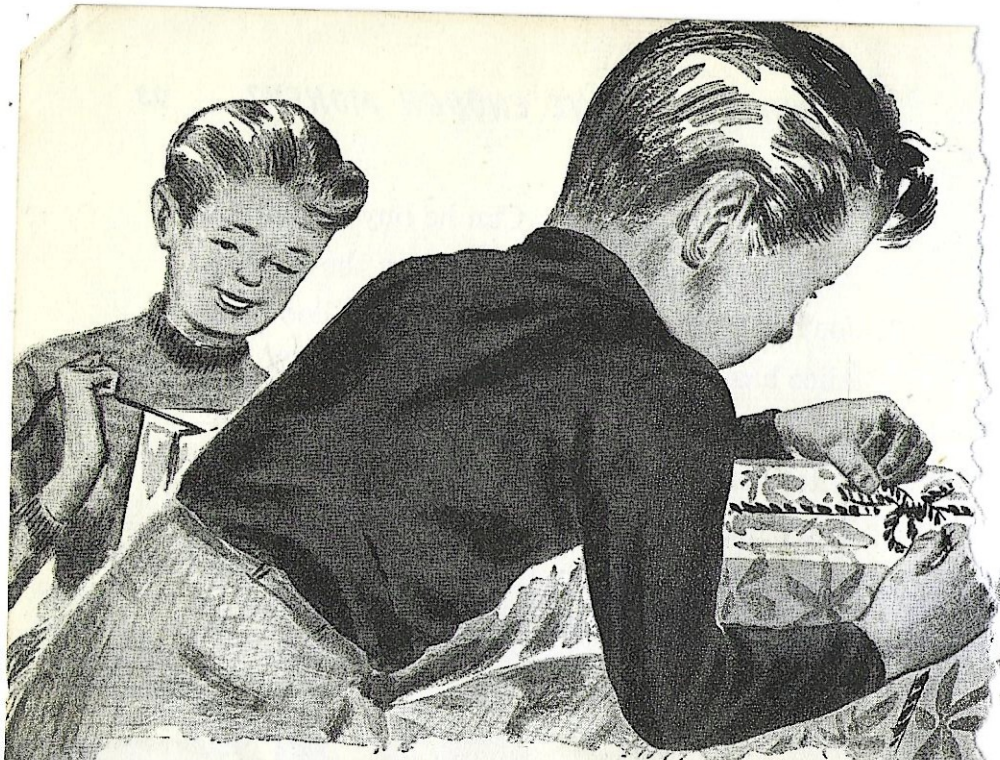
3.	57	69	439	856	357	365
	54	4	431	43	325	13
4.	75	76	198	647	685	587
	3	72	2	3	671	56
5.	49	87	569	578	498	329
	7	81	563	571	68	7
6.	49	27	686	774	966	543
	42	25	45	52	953	541



Answer "yes" or "no":

1. Tom has a half dollar. Can he buy the airplane?
2. Betty has a quarter. Can she buy the dog?
3. Joe has 2 nickels. Can he buy the balloon?
4. Alice has a dollar. Can she buy the doll?
5. Jack has 2 quarters. Can he buy the book?
6. Peter has 2 dimes. Can he buy the top?
7. Mary has 3 nickels. Can she buy the ball?
8. Ann has a dime and a nickel. Can she buy the duck?





GETTING READY FOR CHRISTMAS

The third grade children in our school are getting Christmas presents ready for children in the hospital.

1. The girls are dressing dolls. They want to dress 25 dolls. They have already dressed 13 dolls. How many more dolls have they to dress?

2. On Monday Ann made 5 Christmas stockings, on Tuesday 3 stockings, and on Wednesday 6. How many stockings did Ann make in three days?

3. Nancy made 15 stockings. How many stockings have Nancy and Ann made together? See ex. 2.

4. The girls paid 38¢ for red ribbon and 25¢ for green ribbon. How much more did they spend for red ribbon than for green ribbon?

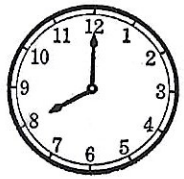
5. The girls brought 10 bags of candy and the boys brought 12 bags. How many bags of candy in all did the children bring?

6. The boys brought 16 games and 9 airplanes. How many less airplanes than games did they bring?

7. The boys plan to pack 25 Christmas boxes for the children. They have packed 10 boxes. How many boxes are not packed?

8. They brought 36 sheets of Christmas paper. They have used 25 sheets. How many sheets are left?

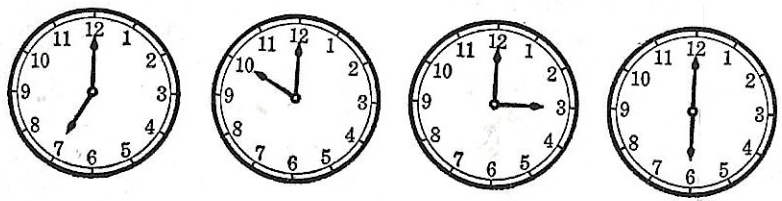
9. The boys spent 50¢ for books and 45¢ for toys. How much money did they spend?



1. Mary is learning to tell time. This clock says 8 *o'clock*. The long hand points to 12. The long hand is the *minute hand*. The short hand points to 8. The short hand is the *hour hand*.

2. When the long hand points to 12, the short hand tells what hour it is.

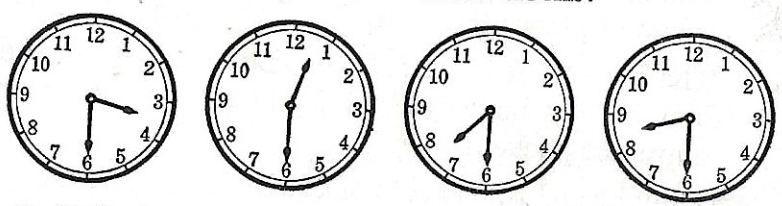
3. Tell the time by each of these clocks:



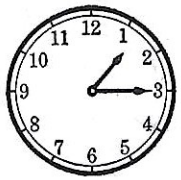
4. Tell where the long hand and the short hand of the clock point at 5 o'clock; at 1 o'clock.

5. This clock says it is *half past* 10. The short hand is halfway between 10 and 11. The long hand is at 6. When it is half past 10, you see that the long hand has gone halfway around the clock.

6. Tell the time by each of these clocks:



7. Tell where the long hand and the short hand of the clock point at half past 2; at half past 6; at half past 9; at half past 12.



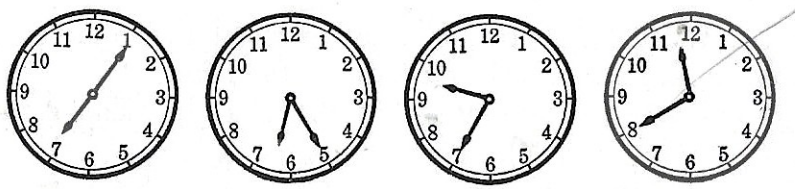
1. Mary goes for her music lesson at a *quarter after* 1. This is the way the clock looks at a quarter after 1. The short hand is a little past 1. The long hand points to 3.

2. You see a little mark on the edge of the clock near each number. It takes the long hand 5 minutes to move from one mark to the next. How many minutes does it take the long hand to move from 12 to 1? from 1 to 2? from 2 to 3? from 12 to 3? from 12 to 5? from 12 to 6? from 12 to 8?

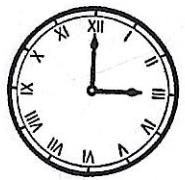
3. You see that it takes the long hand 15 minutes to go from 12 to 3. The clock above says 15 minutes past 1, or 1:15. 15 minutes past 1 is the same as a quarter after 1 or a quarter past 1.

4. Beginning at 1, point to each number around the clock and count the minutes by 5's. How many minutes make a half hour? an hour? How many minutes after the hour is it when the long hand points to 5? to 7? to 9?

5. Tell the time by each of these clocks. The first clock says 5 minutes past 7, or 7:05.



The time on the third clock is sometimes read "25 minutes to 10." How is the time on the last clock sometimes read?



1. The numbers on this clock are called Roman numbers. You write these numbers with letters. Only three different letters are used to write the Roman numbers from 1 to 12. The letter I stands for 1, the letter V stands for 5, and the letter X stands for 10.

2. Here are the first twelve Roman numbers and the numbers they stand for. Learn them:

I	II	III	IIII or IV	V	VI
1	2	3	4	5	6
VII	VIII	IX	X	XI	XII
7	8	9	10	11	12

3. You write the number 4 in two ways like this: IIII or IV. On many clock faces, IIII stands for 4. In most other places IV stands for 4. Which 4 is on the clock in ex. 1?

4. Roman numbers are often used to number the chapters of books. If Tom is reading Chapter VIII in a book, what chapter is that?

5. Read these numbers: IX, III, VI, IV, X.

6. When I stands *before* a larger Roman number, like V or X, it means that 1 is subtracted from the larger number. IX means 10 − 1, or 9. What does IV mean?

7. When I, II, or III stand after a larger Roman number, like V or X, the numbers are added. VII means 5 + 2, or 7. What does XI mean? XII? VI?

8. Write in Roman numbers: 8, 11, 9, 4, 7.

1. On the skating pond there were 5 children on skates, 3 children with sleds, and 4 children making snowmen. How many children were on the pond?

2. The boys and girls had fun throwing snowballs. Dick made 3 snowballs, Bill made 3, and Peter made 5. How many snowballs did the boys make?

3. Alice made 5 snowballs, Ann made 4, and little Betty made 2. How many snowballs did they make?

4. Tom shoveled snow to earn money for a pair of mittens. Mr. Smith paid him 40¢ and Miss White paid him 35¢. How much money did Tom earn in all?

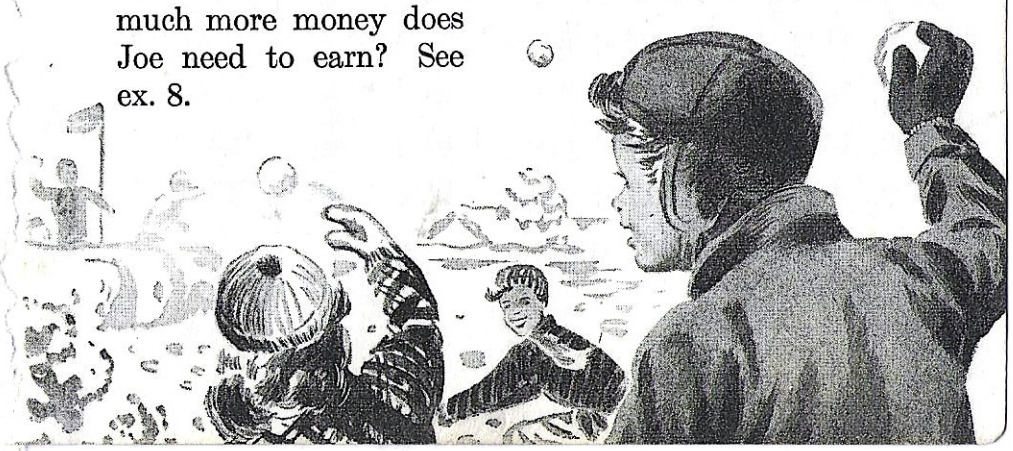
5. Tom wants a pair of mittens that cost 89¢. Did he earn enough money to buy these mittens? (See ex. 4.) If not, how much more does he need to earn?

6. Tom began to shovel the sidewalk in front of his house at 3:45. He worked a half hour. At what time did he finish?

7. Mary went skating at 3:30 and stayed until 4:30. How long did she stay?

8. Joe had a quarter. After school he earned 20¢. How much money did Joe have then?

9. Joe wants to buy a snow shovel for 98¢. How much more money does Joe need to earn? See ex. 8.



1. Tom went to the store. He spent 12¢ for a box of cookies and 5¢ for an orange. How much did Tom spend in all?

When you add a two-figure number and a one-figure number, as you did in the problem above, try to do the work in your head. Study the examples below and tell how to get the answers:

5	15	35	65	22	42	82	12
2	2	2	2	5	5	5	5
7	17	37	67	27	47	87	17

Give these sums orally. They will help you to do column addition:

2.	4	24	14	84	64	34	54	44
	3	3	3	3	3	3	3	3
3.	15	65	85	35	46	26	16	76
	4	4	4	4	1	1	1	1
4.	36	56	26	16	37	77	57	47
	3	3	3	3	2	2	2	2
5.	14	40	35	13	18	56	81	21
	4	8	4	5	1	3	7	8

Give these sums orally:

6. 11 + 4 =	24 + 5 =	63 + 5 =	74 + 3 =
7. 15 + 3 =	17 + 2 =	10 + 9 =	92 + 7 =
8. 13 + 6 =	12 + 6 =	16 + 2 =	84 + 2 =
9. 40 + 5 =	11 + 8 =	22 + 6 =	38 + 1 =

Adding by endings, no bridging.

Add 1 to each of these numbers:

1.	16	36	56	66	13	43	73	93
2.	24	44	84	74	51	91	31	61
3.	35	75	25	85	22	62	92	42
4.	15	33	26	54	62	80	91	72

5. Add 2 to each number in ex. 1–4. Add 3 to each number in ex. 1–4.

Say the answers to these sums:

6. 12 and 7	55 and 3	21 + 6	56 + 3
7. 24 and 5	13 and 6	63 + 5	25 + 2
8. 41 and 8	15 and 1	14 + 4	92 + 4
9. 63 and 2	17 and 2	50 + 8	71 + 5
10. 50 and 9	66 and 3	71 + 7	24 + 4
11. 83 and 4	16 and 2	22 + 5	33 + 6

12. Tom spent 14¢ and Jack spent 5¢. How much did both boys spend?

13. Mary has 12 books and Peggy has 6 books. How many books have the girls all together?

14. Alice spent 15¢ for stamps and 3¢ for a pencil. How much did Alice spend in all?

15. Peter had 13 marbles and Jack gave him 4 more. How many marbles has Peter now?

16. Bob bought a pad for 10¢ and a pencil for 3¢. How much did he spend all together?

1. John had 8¢. His father gave him 5¢ and his mother gave him 6¢. How many cents in all did John have then?

2. For lunch at school Dick bought soup for 7¢, a roll for 4¢, and milk for 5¢. How much did Dick pay for his lunch?

3. Sally paid 7¢ for soup, 8¢ for a sandwich, and 3¢ for an apple. How much did Sally's lunch cost?

4. Find the sum of 5¢, 8¢, and 4¢.

Add. Begin at the bottom of each column and add up. Check by adding down:

5.	1	5	5	2	9	2	4	3	6
	6	2	9	7	2	4	3	7	8
	5	8	2	6	6	6	9	7	3
6.	3	5	3	9	6	4	7	8	3
	9	6	6	8	7	8	9	3	9
	6	3	4	2	3	4	3	8	7
7.	5	4	6	4	5	7	5	3	2
	6	7	6	6	4	6	5	9	6
	4	8	7	6	9	6	9	4	5
8.	2	6	9	7	5	4	9	7	6
	5	8	6	4	7	8	4	7	7
	9	2	2	5	4	5	6	5	4
9.	6	4	7	4	5	3	7	9	7
	3	8	7	9	5	9	4	6	8
	9	3	2	1	9	2	6	3	2

Column addition requiring adding by endings without bridging.

1. How many nickels make a dime? a quarter?

2. How many dimes are there in a half dollar?

3. What does each of these Roman numbers mean?

V IX VI XI IV X VIII

4. Read these numbers: 114; 1400; 1940; 1776.

5. Tell what number means 3 hundreds, 6 tens, and 0 ones; 4 hundreds, 0 tens, and 8 ones.

6. Tell the time by each clock:

Tell the answers:

7.	24 + 5 =	41 + 8 =	15 + 3 =	18 + 1 =
8.	36 + 2 =	20 + 9 =	12 + 6 =	54 + 3 =
9.	33 + 6 =	52 + 7 =	61 + 5 =	45 + 2 =
10.	18 − 9 =	13 − 6 =	10 − 1 =	16 − 8 =
11.	15 − 7 =	17 − 9 =	13 − 5 =	15 − 6 =
12.	10 − 2 =	14 − 7 =	11 − 4 =	13 − 7 =
13.	12 − 6 =	16 − 7 =	15 − 9 =	14 − 6 =

14. Tell what part of each picture is black:

COLUMN ADDITION

Add these numbers and check the work:

1.	7	1	6	8	3	5	9	3	6
	2	2	0	2	3	1	1	5	3
	2	9	8	1	5	8	4	6	8
2.	8	1	1	8	9	5	8	6	4
	1	9	6	9	0	2	3	7	4
	6	6	6	1	7	6	3	2	8
3.	6	3	6	4	5	4	7	5	2
	9	7	2	4	3	6	8	3	8
	2	2	8	3	7	9	3	4	9
4.	4	9	2	4	2	1	6	3	8
	5	2	8	2	9	7	6	8	8
	5	5	5	7	8	8	3	2	2
5.	9	2	9	4	3	4	7	5	7
	9	6	3	9	8	9	4	6	3
	1	7	6	3	4	5	6	5	9
6.	8	6	6	6	8	5	9	5	3
	1	4	5	4	7	7	1	8	8
	8	7	4	8	3	6	3	5	5
7.	8	8	9	5	3	5	5	9	6
	7	1	0	2	1	7	7	6	5
	4	7	3	4	9	5	7	4	8
8.	2	6	3	8	2	3	8	7	7
	3	8	7	2	7	8	0	9	7
	9	0	3	2	5	8	9	1	3

WHAT ADDITION MEANS

1. Bob and Dick sell papers. Yesterday Dick sold 32 papers and Bob sold 26 papers. How many papers did *both* boys sell?

2. Mary picked 15 red roses and 12 white roses. How many roses did Mary pick *in all?*

3. Tom wants to buy a pad for 8¢, a pencil for 4¢, and a sheet of wrapping paper for 5¢. How much money does he need for *all* these things?

4. Jack sold 24 papers on Friday and 32 papers on Saturday. How many papers did Jack sell *all together?*

5. For lunch at school today Alice bought a sandwich for 8¢, soup for 4¢, and cake for 5¢. How much did Alice's lunch cost?

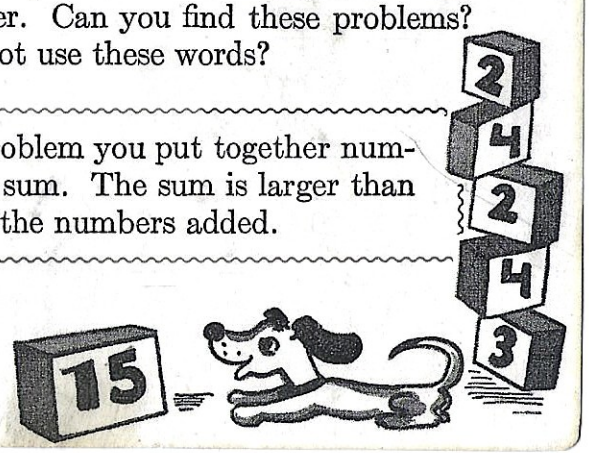
6. Bill had 12 blue marbles. He bought 14 yellow marbles. How many marbles did Bill have then?

7. Jim had 224 stamps. He got 132 more for his birthday. How many stamps has he now?

The problems above are *addition* problems. In these problems you put numbers together to make a larger number, called the *sum.*

In some of the problems above words like *both, in all, all,* and *all together* help you to know that you must add to find the answer. Can you find these problems? Which problems do not use these words?

In an addition problem you put together numbers to find their sum. The sum is larger than any of the numbers added.



MIXED PRACTICE

Write these numbers in figures:

1. Three hundred — Nine hundred six
2. Four hundred twenty — Six hundred thirty-four
3. Five hundred sixty-one — Two hundred twenty-two
4. Write the numbers by 10's from 340 to 400.
5. Write the numbers by 100's from 600 to 1000.
6. Add 3 to each of these numbers:
   14 25 36 41 53 82 60
7. Add 2 to each number in ex. 6. Add 1 to each.
8. Subtract 526 from 936. Take 27 from 59.
9. From 857 take 852. Add 93 to 101.

Subtract these numbers and check the work:

10.	57	99	49	68	137	156	436
	35	90	28	32	92	84	432
11.	88	45	27	43	185	108	756
	6	4	17	40	95	82	551

Add these numbers and check the work:

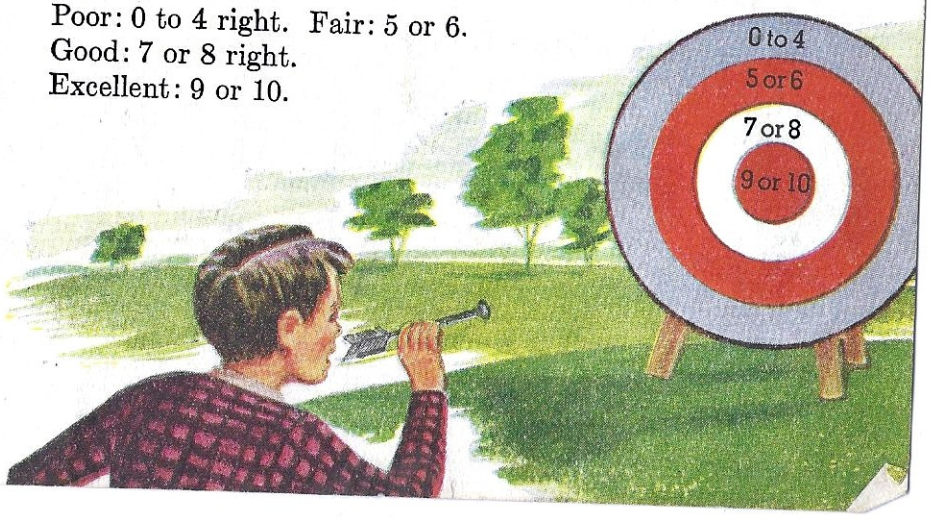
12.	74	95	54	86	526	704	920
	62	83	70	62	531	963	357
13.	43	65	37	72	672	594	925
	76	90	82	53	612	804	561

14.	7	4	9	9	6	9	6	5	4
	1	0	0	2	6	5	2	9	9
	2	6	2	1	2	2	9	3	4

A TEST IN PROBLEM SOLVING

1. On Saturday Mary earned 30¢ and Joe earned 50¢. How much more money did Joe earn than Mary?
2. Sally read 13 pages in her book this morning and 5 pages this afternoon. How many pages did she read?
3. Jack caught 9 fish and Tom caught 6 fish. How many fish did the two boys catch?
4. Ann's mother made 24 cookies. She gave Ann 3 cookies. How many cookies were left?
5. There are 36 children in the third grade. 20 are boys and the rest are girls. How many girls are there?
6. Betty wants to send 18 Christmas cards. She has 12 cards now. How many more cards does she need?
7. Mary had 8 red leaves, 5 brown leaves, and 6 yellow leaves. How many leaves in all did Mary have?
8. Tom paid 25¢ for a book and 45¢ for a game. How much less did he pay for the book than for the game?
9. Dick spent 5¢ for ice cream, 6¢ for candy, and 7¢ for an apple. How much did these things cost?
10. Jane had 48¢ and spent 27¢. How much did she have left?

Poor: 0 to 4 right. Fair: 5 or 6.
Good: 7 or 8 right.
Excellent: 9 or 10.



1. Write *sixteen hundred ninety-three* in figures.
2. Write *eight hundred seven* in figures.
3. Write the number of cents in 5 dimes.
4. Count by 5's from 315 to 340.
5. Count by 10's from 1670 to 1720.
6. Count by 200's from 800 to 1800.
7. Show how to write *one half* in figures.
8. Read these numbers: XII, IV, VIII, X, IX.
9. Write in Roman numbers: 7, 3, 5, 11, 9, 10.
10. Write in figures: half past 6; quarter after 3.
11. Add 4 to each number: 42, 35, 91, 70, 54, 83.

Add these numbers and check the work:

12.	34	92	60	305	426	157
	64	63	70	183	253	12

Subtract these numbers and check the work:

13.	86	145	743	289	679	498
	43	92	521	83	672	475

Find these sums and check the work:

14.	5	8	9	5	2	9	9	6
	8	4	5	6	8	3	3	7
	2	7	5	7	4	5	7	5
15.	2	8	3	7	2	8	3	6
	9	2	8	6	9	8	9	5
	3	9	3	4	7	3	5	8

If you miss more than one example in any row, turn to the Practice Pages for that row.

Add these numbers and check the work:

							PRACTICE PAGES
1.	34	75	82	93	36	71	84
	63	12	56	72	80	64	
2.	46	35	52	64	23	71	100
	3	2	7	5	4	8	
3.	264	528	273	461	257		85
	510	341	123	732	212		
4.	6	8	7	3	5	7	81
	3	1	0	6	4	2	
	4	3	9	2	2	3	
5.	3	9	4	5	5	3	102
	4	3	6	7	5	6	104
	7	5	8	4	9	5	

Subtract these numbers and check the work:

6.	85	97	76	45	83	94	31
	12	34	51	24	62	50	
7.	186	138	176	108	149		89
	92	56	83	23	64		
8.	647	863	385	928	657		90
	412	450	231	706	425		
9.	436	574	258	298	379		92
	430	63	212	85	372		

Diagnostic test.

CHAPTER FOUR

Learning to Carry and Borrow

1. The girls are making Christmas cards to send to their friends. Alice is making 6 red cards, 4 green cards, and 8 white cards. How many cards is Alice making all together?

2. She paid 6¢ for red paper, 6¢ for green paper, and 5¢ for white paper. How much did Alice pay for all her paper?

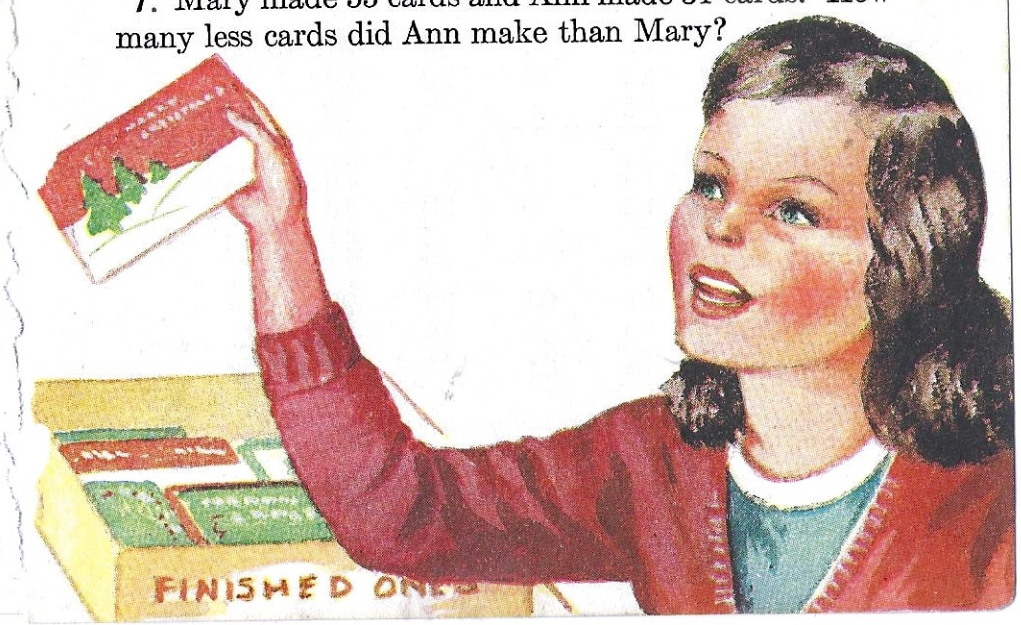
3. Jane has made 12 Christmas cards. She wants to make 35 cards in all. How many more cards does she need to make?

4. Jane spent 30¢ for paper and 15¢ for paint. How many cents did she spend?

5. Mary made 25 Christmas cards last week and 30 more cards this week. How many cards has Mary made in all?

6. Ann made 31 cards in all. She painted 10 cards and cut and pasted the rest. How many cards did she cut and paste?

7. Mary made 55 cards and Ann made 31 cards. How many less cards did Ann make than Mary?

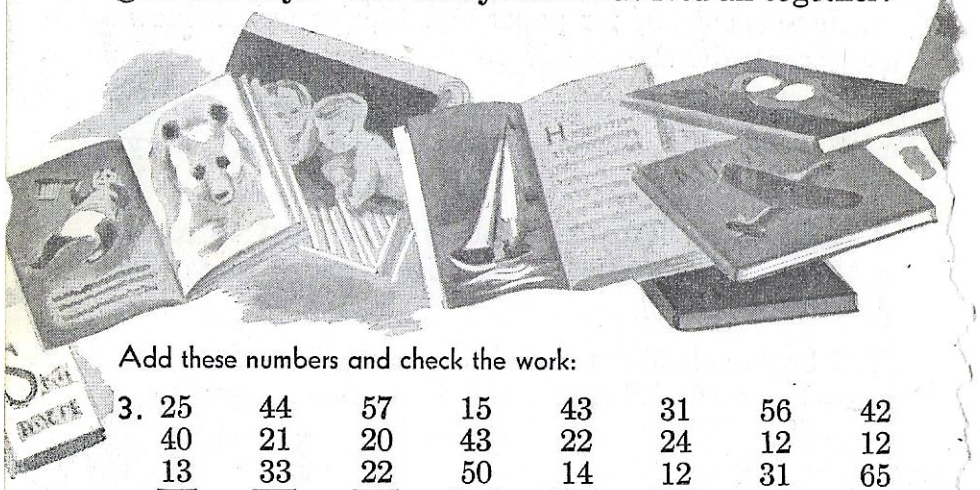


1. Tom feeds his father's chickens. There are 24 brown chickens, 33 white chickens, and 32 black chickens. How many chickens does Tom feed?

Ones: Add upward thinking, "2, 5, 9." Write 9.
Tens: Add upward thinking, "3, 6, 8." Write 8.
The sum is 89. Tom feeds 89 chickens. To check the work, begin at the top and add down.

```
 24
 33
 32
 89
```

2. Ned has 14 books about birds and animals, 12 books about boats and airplanes, and 21 books about girls and boys. How many books has Ned all together?



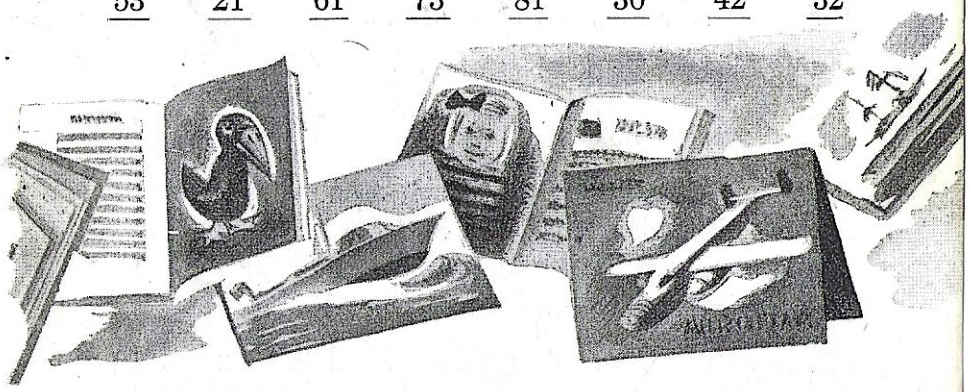
Add these numbers and check the work:

3.	25	44	57	15	43	31	56	42
	40	21	20	43	22	24	12	12
	13	33	22	50	14	12	31	65
4.	17	12	52	13	44	60	21	73
	51	34	25	30	30	16	11	13
	21	50	72	43	45	41	52	62
5.	73	80	81	94	73	98	84	64
	52	22	10	43	40	10	41	72
	42	45	18	21	44	61	32	23

Column addition with two-figure addends, no carrying.

Add. Begin at the bottom of each column and add up. Check the work by adding down:

1.	14	53	46	65	57	44	20	75
	22	34	12	10	10	44	36	20
	53	21	61	73	81	30	42	32



2.	41	25	53	30	62	37	73	54
	32	72	31	62	24	10	21	13
	14	22	55	27	52	72	52	62
3.	78	34	60	36	57	52	23	70
	21	51	25	42	42	10	35	15
	30	34	62	51	40	85	61	83
4.	65	52	13	91	62	51	80	61
	33	21	91	52	31	26	74	23
	31	46	11	12	23	21	13	75
5.	83	52	81	74	80	46	61	47
	41	56	16	41	65	20	12	20
	12	20	32	22	13	83	51	52
6.	40	43	12	93	61	31	41	72
	33	84	95	13	72	67	34	64
	74	11	22	40	33	91	42	32

1. Joe had 18¢. His mother gave him 5¢. How much money did Joe have then?

In this problem you have added a two-figure number and a one-figure number. There is a short way to get the answer. Study the sums below:

8	18	28	38	58	48	78	68
5	5	5	5	5	5	5	5
13	23	33	43	63	53	83	73

All the sums above end in 3 because the sum of 8 and 5, which is 13, ends in 3. The tens figure of each sum is 1 more than the tens figure of the two-figure number because 8 + 5 is more than 10.

2. How many are 35 and 6? Find the sum of these two numbers the short way.

Think, "The sum ends in 1 because the sum of 5 and 6 ends in 1. The tens figure of the sum is 1 more than 3, which is 4, because 5 + 6 is more than 10. 41 is the sum."

35
6
41

Add in your head. Say only the answers:

3.	5	15	25	45	7	17	37	47
	5	5	5	5	6	6	6	6
4.	9	29	49	19	6	36	16	86
	3	3	3	3	8	8	8	8
5.	8	38	78	58	4	44	64	34
	7	7	7	7	9	9	9	9

Adding by endings with bridging.

Add these numbers in your head. Give only the answers:

1.	12	32	14	24	11	31	15	25
	9	9	7	7	9	9	6	6
2.	16	26	19	29	18	38	15	45
	7	7	3	3	6	6	9	9
3.	19	29	13	33	17	27	18	38
	9	9	7	7	9	9	4	4
4.	6	6	4	4	7	7	9	9
	15	35	19	29	13	43	18	28
5.	8	8	9	9	6	6	8	8
	17	27	12	32	19	29	15	35
6.	5	5	7	7	3	3	4	4
	16	36	15	25	19	39	16	26

Add 4 to each number below. Then do the examples again, adding 5 to each number. Then do them again, adding 8, 6, 9, 7, in turn, to each number. Do the work in your head:

7.	43	63	13	83	28	58	78	38
8.	35	85	25	75	34	74	54	84
9.	19	59	79	39	62	42	22	72
10.	26	46	36	86	17	57	37	77
11.	71	51	31	81	20	60	30	90
12.	18	48	88	68	65	15	45	55
13.	33	53	23	73	49	29	89	69
14.	24	44	64	14	56	66	16	76

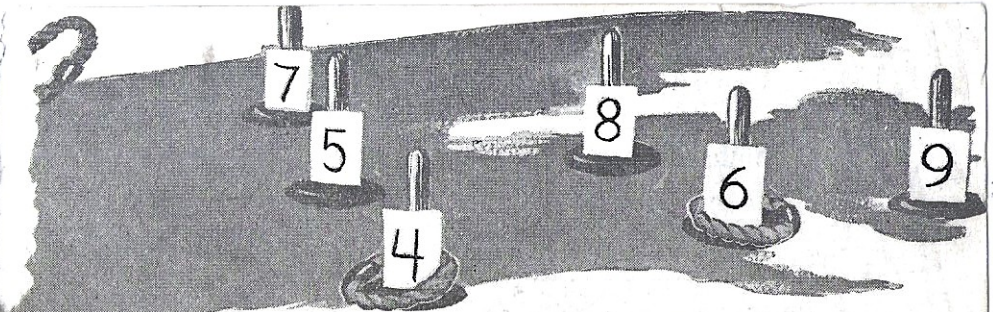
PLAYING RINGTOSS

1. Peggy has 4 rings to toss. She throws one ring over 4, another over 6, a third over 5, and the last one over 5. To find her score, Peggy writes the numbers as shown at the right. Then she adds up, thinking "5, 10, 16, 20." She checks her answer by adding down. She thinks "4, 10, 15, 20." Peggy gets 20 each time she adds. Peggy's score is 20.

4
6
5
5
20

Here are other scores the children made. Add:

2.	4	9	8	6	5	8	4	7	6
	0	0	7	8	4	0	8	0	9
	9	4	0	7	7	4	6	0	0
	7	9	5	0	6	7	5	8	8
3.	8	7	5	8	5	0	6	4	9
	5	5	6	9	8	6	0	7	0
	4	0	0	4	0	7	8	5	0
	5	8	8	0	9	8	0	0	4



ADDING LONGER COLUMNS

1. For lunch at school today Ned had a sandwich for 9¢, milk for 5¢, an orange for 4¢, and a cooky for 3¢. How much did Ned pay for his lunch?

2. At the doll store Sally bought a doll's hat for 6¢, doll's shoes for 4¢, a dress for 6¢, and a coat for 8¢. How much did Sally pay for all these things?

3. Bill has some hens. On Monday he got 4 eggs; on Tuesday, 7 eggs; on Wednesday, 5 eggs; and on Thursday, 8 eggs. How many eggs did Bill get in all?

Add up. Check the answers by adding down:

4.	9	3	6	4	8	3	7	7	4
	5	5	4	6	9	9	4	6	5
	5	9	9	7	6	5	5	5	6
	4	7	2	5	1	4	9	3	7
5.	4	7	9	3	2	8	5	2	7
	7	9	8	8	7	7	4	7	8
	7	3	5	4	2	3	9	9	9
	6	2	2	7	9	4	4	5	3
6.	8	4	7	8	3	3	6	5	3
	6	8	4	6	5	3	8	8	6
	2	4	9	2	7	9	3	4	4
	4	5	3	5	9	6	5	6	7

Column addition with bridging.

1. The children in Miss White's room are working to get ready for a Christmas party this afternoon. There are 19 boys and 20 girls in her room. How many children are there in all?

2. The girls want 50 gold stars to hang on the tree. They made 30 of them yesterday and are finishing the rest today. How many stars will they make today?

3. Miss White has a box of colored balls to hang on the tree. There are 6 blue balls, 8 red balls, 5 white balls, and 4 yellow balls. How many balls are there in the box?

4. Miss White gave Joe 50¢ to buy more balls for the tree. He spent only 40¢. How much money did he bring back to Miss White?

5. Miss White bought 65 candy canes for the party. She kept 40 in a box for the children and hung the rest on the tree. How many candy canes were left to put on the tree?

6. The boys brought the cookies from home. There are 60 chocolate cookies and 24 nut cookies. How many cookies did the boys bring for the party?

7. The girls brought 108 sandwiches. There are 48 sandwiches made of brown bread and the rest are made of white bread. How many sandwiches are made of white bread?

ORAL PRACTICE

1. Count by 100's to 1800.
2. Add 6 to each of these numbers:

   20 43 65 81 34 52 16 27
3. Add 8 to each number in ex. 2. Add 5; add 7.
4. Name the sixth month of the year.
5. How many quarters make a half dollar?
6. Read these numbers: III, XI, VII, XII, X.
7. Tell what each of these numbers means:

   1234 500 1600 78 1007 1401

Give the answers. Watch the signs:

8.	6 + 3 + 8	15 − 6	45 + 3	26 − 5
9.	4 + 4 + 7	13 − 4	56 − 2	47 + 6
10.	9 + 5 + 3	10 − 7	28 + 5	39 − 4
11.	5 + 8 + 2	18 − 9	37 − 4	65 + 7

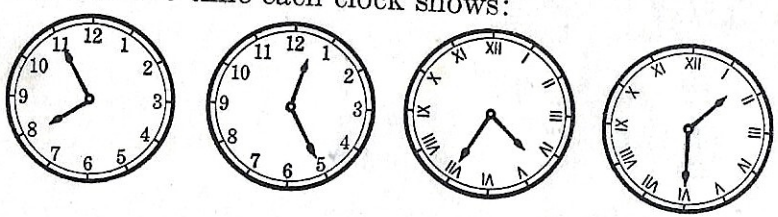
12.

8	7	16	14	8	17	9	11
+ 4	+ 6	− 7	− 5	+ 8	− 8	+ 4	− 6

13.

16	8	7	15	3	14	12	5
− 8	+ 9	+ 7	− 7	+ 8	− 6	− 7	+ 8

14. Tell the time each clock shows:

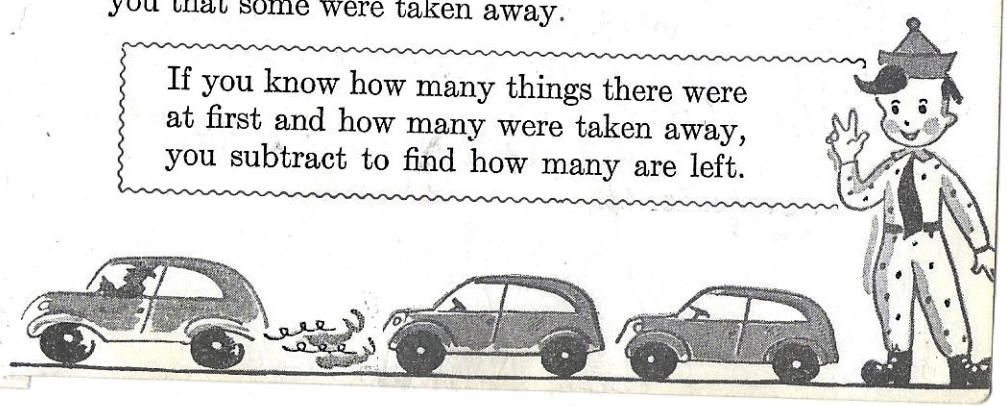


HOW MANY ARE LEFT?

1. Bill had 39 marbles. He lost 8. How many marbles did he have left?
2. Ann's mother bought 36 oranges. The family ate 5 for breakfast. How many oranges were left?
3. Peter had 45¢ and spent 12¢ for candy. How much money did he have left?
4. Tom had 142 stamps. He gave 60 to his brother. How many stamps did he still have?
5. Bill went to the store and bought a box of 12 eggs for his mother. On the way home he fell and broke 3 eggs. How many eggs were left?
6. Jim had 36 ducks. Yesterday 12 of the ducks ran away. How many ducks did Jim have then?
7. This morning Mary's mother had 22 eggs. She used 12 eggs today to make cakes and cookies. How many eggs did she have left?
8. Our class has 48 tickets to sell for the school play. We have sold 28 tickets. How many tickets have we still to sell?
9. Bob put 25 nuts under a tree. In a short time a squirrel carried 13 away. How many nuts were left?

In the above problems, words such as *lost, ate, spent, sold, gave, broke, went, ran away,* and *carried away* tell you that some were taken away.

If you know how many things there were at first and how many were taken away, you subtract to find how many are left.



LUNCH AT SCHOOL

The children eat lunch at school. Each child buys three or four things. Add the numbers to find how much each one must pay.

1. Mary bought a sandwich for 9¢, soup for 6¢, and ice cream for 8¢.

2. Joe got beans for 6¢, an apple for 4¢, milk for 5¢, and ice cream for 8¢.

3. Ann got a sandwich for 9¢, milk for 5¢, an apple for 4¢, and a cooky for 3¢.

4. Tom got beans for 6¢, a roll for 2¢, milk for 5¢, and an apple for 4¢.

5. Jack had soup, a sandwich, a cooky, and ice cream. Find the price of each thing by looking at the picture. Then add to find how much Jack paid.

6. Betty bought soup, beans, a cooky, and ice cream. How much did Betty pay?

Find the cost of each of these lunches:

7.	9	6	6	6	9	6	8	9	5
	4	2	9	3	8	6	6	3	9
	3	5	8	8	4	4	2	5	8
8.	2	3	5	2	9	4	6	5	6
	6	4	3	5	6	9	6	2	9
	3	9	6	4	8	3	4	6	4
	8	8	8	3	3	8	3	8	3

Subtract these numbers and check the work:

1.	79	86	177	149	123	136
	51	30	85	87	42	53
2.	94	69	155	134	175	115
	83	15	61	82	95	40
3.	52	78	129	113	135	155
	20	24	89	71	93	94
4.	86	54	108	149	183	128
	55	31	97	64	93	61
5.	97	68	167	107	135	169
	46	42	71	13	42	95
6.	76	92	845	786	941	967
	32	61	521	266	730	124
7.	98	78	627	386	867	898
	20	46	105	224	356	468
8.	79	48	446	567	859	437
	73	7	13	40	853	431
9.	42	97	577	738	584	789
	32	81	103	732	280	277
10.	59	85	596	378	958	686
	32	64	54	50	354	350
11.	96	39	739	674	263	684
	92	4	426	162	52	634

1. Jack went to the store for his mother. He bought a loaf of bread for 12¢, a can of corn for 14¢, and a box of crackers for 21¢. How much did he pay for these things?

2. Bob wants to buy a pad for 8¢, a pencil for 4¢, an eraser for 5¢, and some colored paper for 5¢. How much money does he need to buy all these things?

3. Jim has 50¢. He wants to buy a flashlight that costs 85¢. How much more money does he need?

4. Dick earned 25¢ for carrying wood for the fireplace and 10¢ for cleaning snow off the porch. How much did Dick earn?

5. There were 185 school days last year. Jack was in school 172 days. How many days was Jack absent?

6. There were 232 boys and 296 girls in our school who did not miss a day of school last year. How many more girls than boys did not miss a day of school?

7. Mary spent 14¢ for bus fare, 15¢ for lunch, and 10¢ for candy. How much did she spend?

8. Nancy had 68¢ in her bank. She took out 35¢ for a hair ribbon. How much money did she have left?

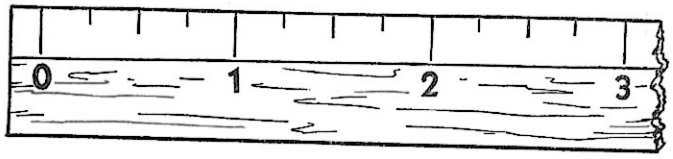
9. Billy bought a book for 20¢. He gave the clerk 50¢. How much money did he have left?

10. There were 110 people who came to our school play in the afternoon and 185 who came in the evening. How many people all together came to see our play?

11. How many more came to see our play in the evening than in the afternoon? See ex. 10.

1. The boys and girls are making models of airplanes and boats. Peter is measuring Tom's airplane with a ruler. He finds that each wing is 6 inches long. Peter is going to make an airplane just like Tom's.

2. This picture shows part of a foot ruler. This part



of the ruler is 3 inches long. What do the numbers and marks on the ruler stand for?

A foot ruler is 12 inches long.

3. With a ruler draw lines on a sheet of paper. Make lines of these different lengths: 4 inches, 7 inches, 6 inches, 2 inches, 9 inches.

1. Measure this arithmetic book with a ruler. How many inches long is it? How many inches wide is it?

2. How many inches long is your pencil?

3. How many inches long is your pad? How many inches wide is your pad?

4. Look for something in the room that you think is longer than 1 foot.

5. Draw a line on the blackboard that you think is 1 foot long. Measure it with your ruler to see how near you came to 1 foot.

6. On the blackboard draw a line that is 1 foot 4 inches long. Draw a line 1 foot 6 inches long.

7. Things shorter than 1 foot are often measured in inches. Things longer than 1 foot are often measured in feet and inches. How many feet and inches long is the teacher's desk? How wide is it?

8. Which of the things below would you measure in inches? Which would you measure in feet and inches?

book	pin	crayon	floor
kite	rug	window	table

A TRIP TO THE AIRPORT

1. Yesterday 29 boys and 35 girls went to the airport by bus. How many children went to the airport?

To add 29 and 35 you must learn to carry:

Think "5 ones + 9 ones = 14 ones." 14 ones make 1 ten and 4 ones. Write 4 in ones place. Carry the 1 ten to the tens column and add it to 3 tens, making 4 tens.

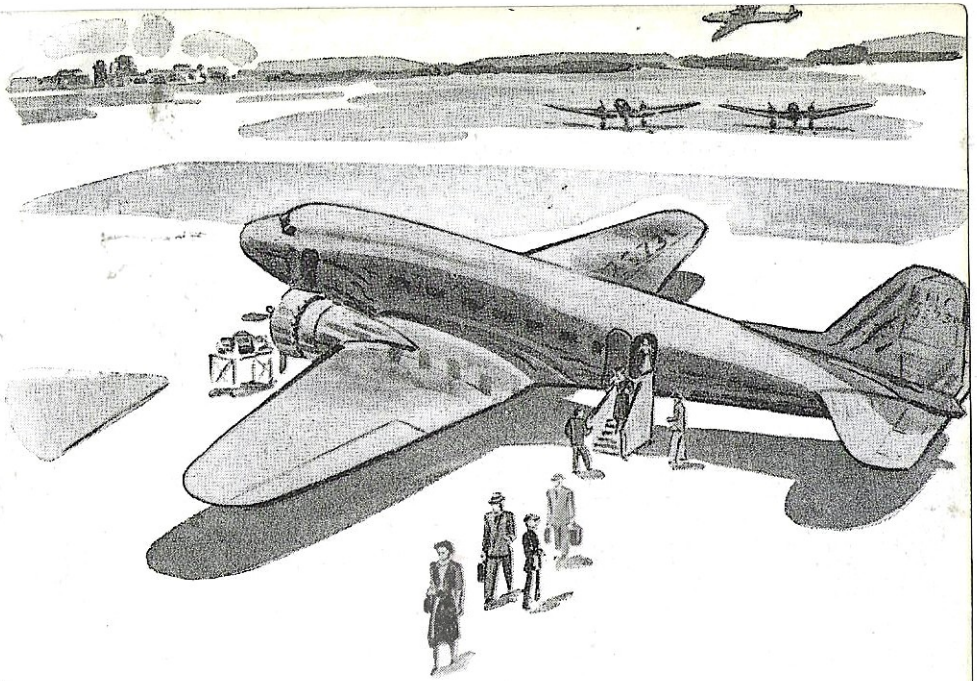
$$\begin{array}{r} 29 \\ 35 \\ \hline 64 \end{array}$$

Think "4 tens + 2 tens = 6 tens." Write 6 in the tens column. The sum is 64. 64 children went to the airport.

Check the answer by adding down. Think "9, 14." Write 4. Carry 1 and add it to 2, which makes 3. Think "3, 6." You get 64 as the sum again, so the work is right.

2. In one bus there were 13 boys and 18 girls. How many children rode in that bus?

3. In the other bus there were 16 boys and 17 girls. How many children were in that bus?



4. At the airport the children saw two large airplanes come in. They counted 28 passengers in one airplane and 24 in the other. How many people came in those two airplanes?

5. The children saw 14 men and 9 women get in one plane. How many people flew away in that plane?

6. The children saw a mail plane come in. The plane carried 27 large bags of mail and 24 small bags. How many bags of mail did the plane bring?

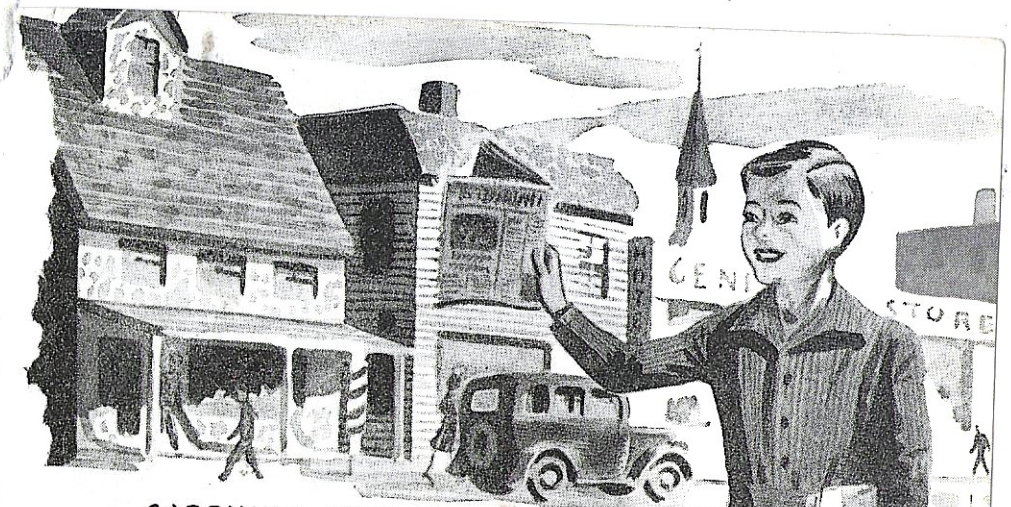
7. This mail plane brought two cages of pretty little lovebirds for the zoo. One cage had 14 birds, the other had 17. How many birds came in that plane?

8. While they were at the airport the children saw 18 big airplanes and 15 small airplanes. How many airplanes did they see in all?

CARRYING IN ADDITION

Add these numbers. Begin at the bottom and add up. Check the work by adding down:

1.	58	67	42	38	69	13	47	49
	43	16	29	67	24	68	37	22
2.	29	78	67	32	36	96	28	18
	52	29	95	58	37	75	18	57
3.	27	44	88	49	27	68	13	49
	38	59	82	19	44	35	79	16
4.	39	75	29	25	44	53	58	27
	78	16	33	95	98	67	16	59
5.	25	38	77	54	19	36	29	26
	67	24	49	27	45	86	21	68
6.	16	31	37	79	25	57	65	29
	58	49	15	69	78	94	59	47
7.	97	39	36	85	19	36	24	19
	23	37	44	18	86	45	17	34
8.	86	54	38	56	88	55	46	78
	79	36	95	27	43	79	36	57
9.	38	25	48	26	15	35	49	58
	17	16	24	47	19	35	36	19
10.	29	14	19	25	19	39	16	39
	34	68	41	68	25	28	64	19



CARRYING TWO IN ADDITION

1. Last week Tom earned 25¢ selling papers, 28¢ helping the grocer, and 38¢ helping his mother. How much did he earn in all?

Add 25, 28, and 38, this way:

Ones: Begin at the bottom and add up. Think "8, 16, 21." Write 1. Carry 2 to the tens column and add it to 3, making 5.

Tens: Think "5, 7, 9." Write 9. The sum is 91. How much did Tom earn in all?

Check by adding down. Think "5, 13, 21." Write 1. Carry 2 to the next column and add it to 2. Think "4, 6, 9." Write 9. The sum is 91 again so the work is right.

$$\begin{array}{r} 25 \\ 28 \\ 38 \\ \hline 91 \end{array}$$

2. Bill earned 17¢ one day, 28¢ another day, and 25¢ on a third day. How much did Bill earn?

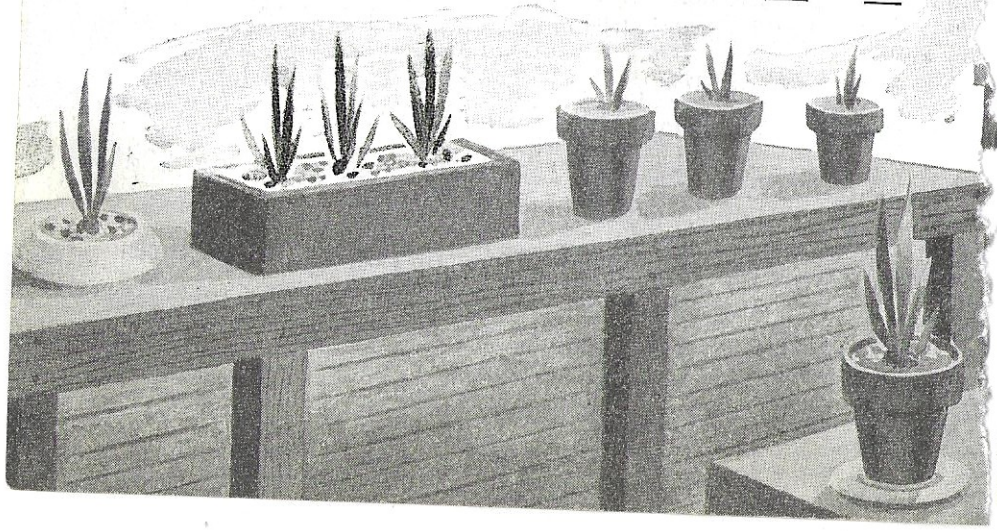
3. Tom spent 29¢ for a book, 15¢ for candy, and 28¢ for the movies. How much did Tom spend in all?

4. Peggy cut out 15 pictures of flowers, 18 pictures of birds, and 18 pictures of dogs. How many pictures did Peggy cut out?

COLUMN ADDITION

Add these numbers and check the work:

1.	54	59	36	48	28	45	96	37
	47	43	10	43	33	59	81	64
	28	34	78	11	25	11	12	25
2.	35	39	79	61	39	77	54	26
	97	20	95	65	23	58	11	39
	29	33	21	19	52	35	26	66
3.	26	66	27	99	57	84	77	55
	78	72	67	22	21	77	49	34
	23	22	59	28	16	14	55	49
4.	62	98	68	82	89	56	98	47
	19	13	58	10	51	19	70	23
	11	27	37	57	51	13	14	28
5.	97	88	77	46	83	98	37	65
	29	46	23	58	25	46	97	57
	40	51	74	46	68	35	55	38
6.	39	97	53	65	49	97	47	76
	26	35	68	29	14	69	43	55
	16	63	38	54	13	23	78	20



DOZEN

1. Jane's mother bought a dozen lily bulbs to plant in little pots. How many bulbs are there in 1 dozen?

2. Jane had a little pot for each one of the bulbs. How many pots did she have?

3. Remember this:

12 things = 1 dozen (doz.)

4. Mother bought a dozen red roses and a dozen white roses. How many roses did Mother buy in all?

5. Mother gave 6 white roses to Mary for her birthday. How many white roses did she have left?

6. Mother sent Grandmother 4 red roses. How many red roses did Mother have left?

7. Which of these things are sold by the dozen?

potatoes oranges rolls shoes cookies

1. Dick helped his father in the store on Saturday. Dick sold Mrs. Green a quart of milk for 17¢, a loaf of bread for 8¢, and a can of corn for 15¢.

Dick wrote the numbers as shown at the right. He could not add the numbers and asked his father to help.

$$\begin{array}{r} 17 \\ 8 \\ 15 \\ \hline \end{array}$$

Dick's father said the numbers must be written in columns. He wrote the ones in one column and the tens in another column, as shown at the right. Then Dick could add the numbers. Tell how he did it.

$$\begin{array}{r} 17 \\ 8 \\ 15 \\ \hline 40 \end{array}$$

2. Tom's mother bought a dozen eggs for 55¢, rolls for 9¢, and a jar of jelly for 28¢. How much did she pay for these things?

3. Joe bought a box of sugar for 13¢, matches for 6¢, soap for 7¢, and a can of beans for 14¢. How much did Joe have to pay?

4. Alice bought a quart of milk for 17¢, a pound of butter for 52¢, and an apple for 5¢. What did Alice pay for these things?

5. Jane's mother bought a box of sugar for 13¢, a loaf of bread for 12¢, a cake for 25¢, and a box of crackers for 7¢. How much did these things cost?

6. Mrs. Smith bought a pound of butter for 52¢, bread for 15¢, and oranges for 25¢. How much did all these things cost?

7. Here are some other numbers that Dick had to add. Copy these numbers. Then add and check:

25	38	42	19	35	28	9	10
7	10	25	7	12	36	34	5
16	9	16	25	9	8	45	27

1. On Saturday three classes from our school will go to the museum. There are 32 pupils in one class, 29 in another, and 31 in the third. How many pupils will go to the museum?

2. Will 3 busses be enough to take the pupils and 3 teachers to the museum? Each bus can carry 32 persons. See ex. 1.

Add these numbers and check the work:

3.	68	27	84	85	73	69	78	57
	73	95	86	16	39	44	55	63
4.	53	76	47	96	78	18	89	26
	48	26	78	29	82	88	56	58
5.	59	98	65	78	39	46	49	75
	75	17	37	64	61	87	68	25
6.	79	56	69	24	87	69	97	84
	29	85	57	87	69	74	48	58

Write these numbers in columns. Then add and check:

7. 86 + 56 + 67	79 + 28 + 12
8. 38 + 95 + 54	86 + 38 + 66
9. 42 + 57 + 86	24 + 84 + 59
10. 82 + 36 + 89	94 + 26 + 53
11. 99 + 75 + 32	50 + 75 + 48
12. 69 + 47 + 36	85 + 67 + 67
13. 57 + 29 + 46	32 + 19 + 54

Read each exercise. Then tell whether it is right or wrong by saying "yes" or "no":

1. 17 is 9 more than 8.
2. $6 and $4 make $10.
3. The sum of 128 and 100 is 238.
4. A half dozen cookies is 6 cookies.
5. A foot is more than 10 inches.
6. 825 is less than 582.
7. 1682 = 1000 + 600 + 80 + 2.
8. The sum of 6, 1, 2, and 5 is 15.
9. 5 nickels are the same as 20 cents.
10. The two numbers after 1000 are 1001 and 1002.
11. February has 28 days this year.
12. A dozen eggs is the same as 15 eggs.
13. A quarter is the same as 2 dimes and 2 nickels.
14. Joe's teacher is a tall man. He is 6 inches tall.
15. The number 1060 means 1 thousand, 0 hundreds, 0 tens, and 6 ones.
16. It is an hour from half past two to half past three.
17. Today is February 14. A week from today is February 22 — Washington's Birthday.
18. Mother bought a dozen eggs. She used 3 of them. Now she has 9 eggs left.
19. Jack broke a chocolate bar into 2 equal parts. Each part is one quarter of the whole bar.

PROBLEMS

1. Ann spent 45¢ for her mother's Christmas present and 50¢ for her father's present. How much did the two presents cost?

2. Tom wants to buy a puzzle for 35¢. He has 20¢ now. How much more money does he need?

3. Dick had 95 stamps in his book. Uncle Jack gave him a package of 50 stamps for Christmas. How many stamps did Dick have then?

4. Mary had 36 sheets of Christmas wrapping paper. She used 30 sheets. How many sheets has she left for next Christmas?

5. Mary had 50¢. She spent 30¢ for Christmas ribbon. How much money did she have left?

6. Peggy has a nickel, a dime, and 3 pennies in her pocket. How much money has Peggy in her pocket?

7. Fred's Christmas vacation started on Monday, December 21. He went back to school two weeks from that date. On what day in January did school open?

8. Betty made an apron in school. She paid 23¢ for the cloth, 10¢ for tape to bind it, and 5¢ for thread. How much did Betty pay all together?

9. Jane had a party in the Christmas vacation. There were 24 children at the party and 14 of them were girls. How many boys were there?

10. Last Saturday Bob took Joe to a movie. He paid 22¢ for each ticket. How much did the tickets cost?

CARRYING IN SUBTRACTION

1. A ticket to the movies costs 43¢. Jane has 25¢. How much more does she need to buy a ticket?

One method of subtracting 25 from 43 is given below. Another method is given on the next page. Do not study both pages. The teacher will tell you which method to use.

Additive Method. Think of the larger number 43 as the sum of two numbers. One of these numbers is 25. You must find the other number. To do this, find what number must be added to 25 to make 43.

Ones: 5 is larger than 3, so you cannot add a number to 5 to make 3. But you can add a number to 5 to make 13. Think "5 and **8** are 13." Write 8. Carry the 1 ten of 13 to the tens column and add it to the 2 tens, which makes 3 tens.

$$\begin{array}{r} 43 \\ 25 \\ \hline 18 \end{array}$$

Tens: Think "3 and **1** are 4." Write 1. You see that 18 added to 25 makes 43. The answer is 18. How many more cents does Jane need?

To check the work, add 18 and 25, beginning with the 8 and adding up. Think "8 + 5 = 13." Then carry 1 and think "1 (carried) + 1 + 2 = 4."

In the example above, the answer 18 is called the *remainder*.

2. John had 64¢. He bought a book for 25¢. How much did he have left?

3. Bill had 35 papers to sell. He sold 27 of them in an hour. How many papers did he have left then?

First work in carrying in subtraction.

1. A ticket to the movies costs 43¢. Jane has 25¢. How much more does she need to buy a ticket?

You must subtract 25 from 43. Your teacher will tell you whether to use the method below or the one given on page 139. Do not learn both methods.

Take-Away Method. *Ones:* You cannot take 5 from 3 because 5 is larger than 3. So you borrow 1 ten from the 4 tens and add it to 3, making 13. Think "5 from 13, **8**." Write 8.

Tens: Since you borrowed 1 ten from 4 tens, there are only 3 tens left. Think "2 from 3, **1**." Write 1. The answer is 18. How many cents does Jane need?

$$\begin{array}{r} 43 \\ 25 \\ \hline 18 \end{array}$$

To check the work, add 18 and 25, beginning with the 8 and adding up. Think "8 + 5 = 13." Carry 1 to the next column and think, "1 (carried) + 1 + 2 = 4."

In the example above, the answer 18 is called the *remainder*.

2. Sally bought a book for 52¢ and a game for 43¢. How much more did the book cost than the game?

3. Alice had 25 paper dolls. She gave 16 to her sister. How many paper dolls did Alice have left?

4. Bill earned 15¢ running an errand. He wants to buy a knife that costs 50¢. How much more money does he need?

5. Ann had 75¢ to spend for a skating cap. She bought one for 59¢. How much did she have left?

6. Jack wants to practice 40 minutes on his drum after school. He has practiced 25 minutes. How many more minutes does he need to practice?

First work in borrowing in subtraction.

Subtract these numbers and check the work:

1.	67	52	92	83	70	91	92	93
	29	13	48	38	11	55	64	74
2.	84	40	61	93	55	82	84	83
	57	16	23	49	27	16	29	35
3.	61	96	70	58	41	60	91	93
	32	77	35	39	23	12	34	69
4.	84	70	97	91	53	71	83	47
	65	43	28	17	35	56	34	28
5.	60	32	81	63	76	96	60	72
	48	15	49	26	48	19	17	57
6.	86	93	80	82	74	54	72	90
	29	27	64	47	18	27	29	62
7.	64	88	45	51	92	83	40	64
	46	19	26	13	35	54	18	35
8.	35	90	75	83	91	82	67	74
	18	59	36	27	34	53	39	16
9.	83	42	71	95	50	44	80	36
	19	28	15	18	15	25	36	18
10.	71	50	93	61	73	80	56	91
	47	24	56	32	39	63	38	25
11.	81	62	93	82	70	83	45	90
	28	36	74	37	43	29	16	25

1. Alice wants to buy a book that costs 75¢. She now has 48¢. How much more money does she need?

2. Jane paid 65¢ for a book about birds. Mary's book cost 58¢. How much less did Mary's book cost than Jane's?

3. Jim earned 45¢ selling papers. Tom earned 62¢. How much more did Tom earn than Jim?

4. Jim spent 26¢ for a book. How much did he have left from 45¢?

5. In the park we saw 18 children on sleds and 12 on skates. How many children did we see in the park?

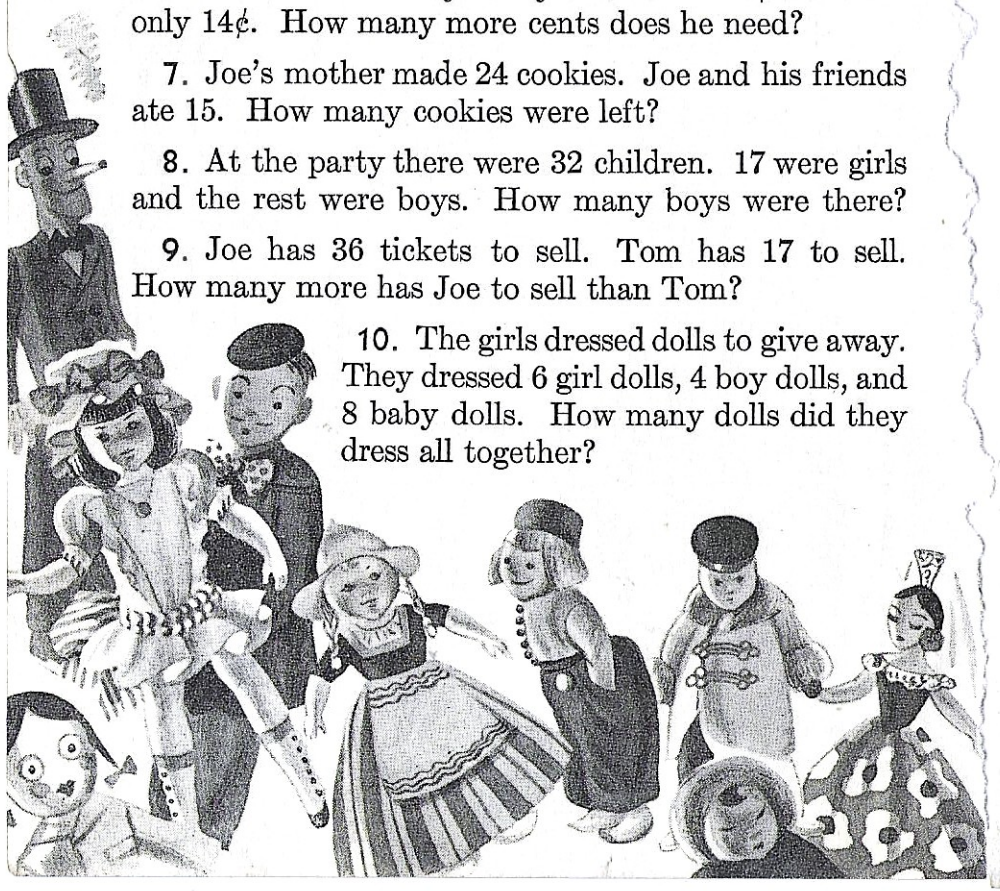
6. Bill wants to buy a toy that costs 32¢. He has only 14¢. How many more cents does he need?

7. Joe's mother made 24 cookies. Joe and his friends ate 15. How many cookies were left?

8. At the party there were 32 children. 17 were girls and the rest were boys. How many boys were there?

9. Joe has 36 tickets to sell. Tom has 17 to sell. How many more has Joe to sell than Tom?

10. The girls dressed dolls to give away. They dressed 6 girl dolls, 4 boy dolls, and 8 baby dolls. How many dolls did they dress all together?



1. Jack made 36 snowballs and Tom made 29. How many more snowballs did Jack make than Tom?

2. It took Tom 22 minutes to walk to the skating pond. It took him 19 minutes to walk back. How much longer did it take him to go to the pond than to come back?

3. Jim has 22 mice. There are 18 white mice and the rest are black. How many black mice has he?

4. Tom earned 62¢ and spent 48¢. How much did he have left?

Subtract. Check the work by adding up:

5.	44	90	52	51	84	42	70	92
	35	67	48	15	49	14	23	86
6.	81	75	97	75	30	34	95	54
	26	69	48	47	4	27	36	29
7.	85	60	82	63	82	27	50	31
	78	26	35	54	16	19	5	24
8.	92	73	91	64	70	56	53	70
	17	9	83	18	68	18	47	41
9.	58	84	56	43	76	61	91	30
	29	76	9	36	37	58	22	6
10.	90	41	93	82	81	21	92	63
	72	17	85	19	48	14	53	48
11.	83	31	91	70	67	80	93	72
	58	23	39	26	38	39	65	57

HOW MANY ARE GONE?

1. Bill had 35 marbles in a bag. When he got home he found only 27 marbles. He lost the rest through a hole in the bag. How many marbles did he lose?

2. Ann's mother bought some apples on Saturday. There were 33 apples all together. On Monday there were only 17 apples left. How many apples did the family eat?

3. Peter had 45¢. After spending money for some candy and a box of cookies, he had 18¢ left. How much money did he spend?

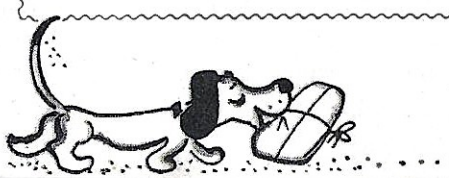
4. Tom had 142 stamps. He gave some to his brother. Tom then had 52 stamps left. How many stamps did Tom give to his brother?

5. Bill bought a box of 12 eggs at the store. When he got home there were only 9 eggs. He had fallen and broken the rest. How many eggs did he break?

6. When Mary's mother began baking there were 22 eggs in the pan. When she finished there were 7 eggs in the pan. How many eggs had she used?

7. This morning Fred had 40¢. After buying some colored pencils, he had only 12¢ left. How much did he pay for the pencils?

If you know how many things you had at first and how many you have now, you subtract to find how many are gone.
If you know how much money you had at first and how much you have now, you subtract to find how much you spent.



1. Bill had 36¢. He spent 19¢. How many cents did he have left?

2. Jane bought 12 jelly cookies, 18 sugar cookies, and 18 chocolate cookies at the store. How many cookies did Jane buy all together?

3. There are two third grade rooms in our school. One room has 32 children and the other has 29. How many children are there in both third grades?

4. Jim had 50¢ when he went to the store. When he came back he had 16¢ left. How much did he spend?

5. Bob has 18 chickens. Only 15 came when he fed them today. How many chickens were missing?

6. Betty needs 75¢ to buy a book. She has 58¢. How many more cents does she need?

7. Jack bought a bag of sugar for 32¢, a can of pears for 27¢, and a box of cookies for 35¢. How much did these things cost?

8. Mary baked 24 cookies. There were 9 chocolate cookies and the rest were sugar cookies. How many sugar cookies did Mary bake?

9. Dick spent 35¢ for a book, 12¢ for candy, and 25¢ for the movies. How much did Dick spend in all?

10. Tom has sold all but 9 of his 35 rabbits. How many rabbits has Tom sold?

11. Jane made 25 paper flowers. Mary made 18. How many more flowers did Jane make than Mary?

12. Bill had 45¢ in his bank. Last week he earned 25¢. How much money did Bill have then?

Subtract these numbers. Check the work:

1.	76	97	62	96	836	156	343
	35	68	36	81	736	93	331
2.	76	88	93	31	155	179	136
	18	57	49	17	103	94	61
3.	61	65	50	51	165	126	428
	46	62	23	12	72	32	224
4.	74	56	48	40	794	529	249
	58	39	12	8	153	516	203
5.	23	80	85	67	120	273	158
	7	55	37	26	90	32	85
6.	43	71	94	81	485	137	386
	15	38	39	75	4	83	333
7.	39	84	73	30	646	749	149
	22	27	40	6	244	747	63
8.	62	95	42	88	125	278	187
	4	91	5	12	74	156	172
9.	37	52	40	69	776	129	189
	12	5	14	39	610	77	124
10.	92	77	90	98	639	100	387
	63	6	32	24	631	70	287
11.	54	60	58	80	148	589	189
	24	49	29	51	93	555	8

1. Jack had 50¢. He spent all but 12¢ of it for a ball. How much did the ball cost?

2. Ned earned 50¢ last week and 35¢ this week. How much less did he earn this week than last?

3. Fred had 45 marbles. Uncle Tom gave him 25 marbles and he bought 15. How many marbles has Fred now?

4. The baker sold 44 pies today. There were 25 pumpkin pies. The others were apple pies. How many were apple pies?

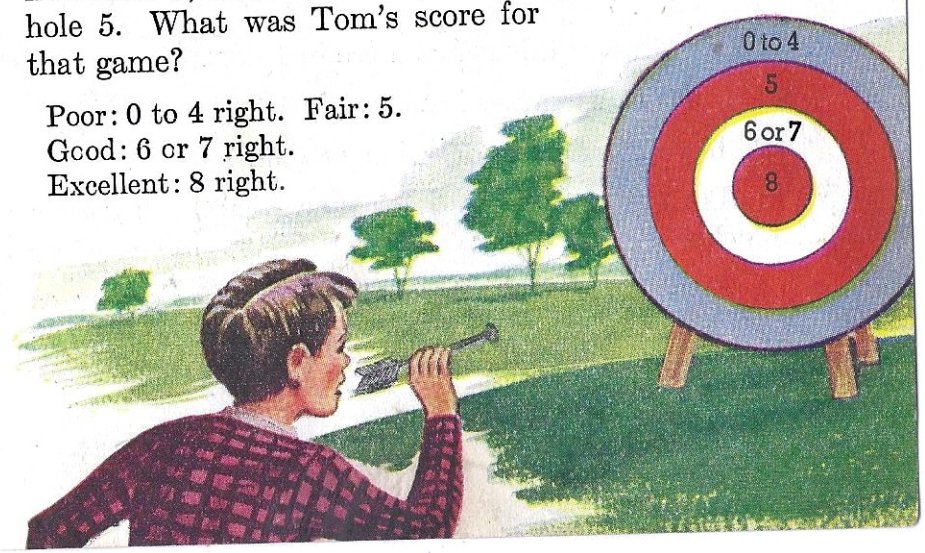
5. Mary counted 14 books on one shelf, 18 books on another shelf, and 21 books on a third. How many books were on the three shelves?

6. Mr. Green had 48 turkeys. He sold 44 of them. How many turkeys did he have left?

7. Nancy's book has 125 pages. She has read 92 pages. How many more pages does she need to read to finish the book?

8. Tom played a game of beanbag. He threw a bag into hole 3, another into hole 9, and the third into hole 5. What was Tom's score for that game?

Poor: 0 to 4 right. Fair: 5.
Good: 6 or 7 right.
Excellent: 8 right.



Add these numbers and check the work:

1.	7	8	9	5	8	3	6	2
	4	6	7	8	4	4	9	8
	0	3	2	5	5	6	4	7
	4	2	1	3	7	9	4	6
2.	32	13	42	51	15	28	18	25
	43	20	18	23	26	45	5	6
	13	46	37	24	53	18	65	47

Subtract and check the work:

3.	57	87	83	44	60	72	53	90
	32	27	44	27	48	45	16	86

Give the sums:

4. 26 and 5	39 and 8	15 + 6	17 + 4
5. 17 and 9	24 and 7	13 + 9	36 + 6
6. 28 and 7	32 and 9	17 + 6	29 + 2
7. 45 and 6	19 and 5	15 + 8	18 + 4
8. 36 and 4	71 and 9	19 + 4	24 + 7
9. 57 and 7	48 and 3	16 + 5	19 + 3

10. How many things are there in 1 dozen?

11. How many inches are there in 1 foot?

12. Is your teacher's desk longer than 1 foot?

13. Is the width of this book more than or less than 10 inches?

14. Jack has a kite 18 in. wide. Is this more than or less than 1 ft.? How many inches more or less is it?

If you miss more than one example in any row, turn to the Practice Pages for that row.

Add these numbers and check the work:

							PRACTICE PAGES
1.	53	64	31	42	53	22	112, 113
	10	23	44	33	22	34	
	24	12	20	13	23	41	
2.	18	5	59	22	8	7	114, 115
	6	48	7	9	34	63	
3.	58	49	27	49	17	55	130
	36	34	36	21	67	19	
4.	24	39	24	28	25	37	132
	16	31	38	17	19	19	
	22	15	27	25	48	35	
5.	6	6	8	3	1	3	117
	8	8	5	7	6	8	
	4	5	6	9	7	4	
	9	6	4	2	8	7	

Subtract these numbers and check the work:

6.	73	85	38	29	49	76	124
	33	42	27	8	42	21	
7.	152	282	118	636	135	471	124
	92	51	72	630	55	271	
8.	73	67	72	90	96	61	141
	37	19	46	66	48	23	

Diagnostic test.

CHAPTER FIVE

Multiplying by 2

USING THE TELEPHONE

1. Betty is using the telephone to invite some girls and boys to a party. She looks in the telephone book to find each number. Fred's number is South 2809. When Betty calls Fred she says the number like this: "South, two, eight, o, nine." When there is a zero in the number, Betty says it like the letter o.

2. Here are the telephone numbers of the other children Betty invited. Tell how to call each number:

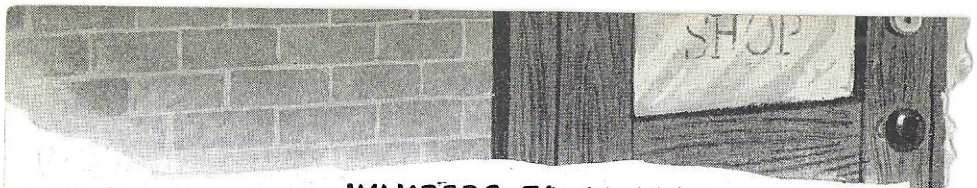
Lake 5724	Spring 6007	North 1687
Main 6999	Market 4806	South 3383

3. In large cities telephone numbers are sometimes written like this: Spring 2–6421.

4. In a four-figure number the first figure at the left stands for *thousands*. The number 2809 means 2 thousands, 8 hundreds, 0 tens, and 9 ones. When 2809 is not a telephone number, it is read like this: *two thousand eight hundred nine* or *twenty-eight hundred nine.*

5. Read these numbers: 4856, 2590, 7093, 9904, 3500, 9000, 6612, 8007, 5050.

Meaning of numbers to 10,000.



NUMBERS TO 10,000

1. Four-figure numbers are used in many places. Dates and house numbers are often written with four figures. You speak of the year 1945 or you say that Mary lives at 3264 Hill Street.

2. When you read 3264 Hill Street, you say "*thirty-two sixty-four* Hill Street." The number 3264 is also read 3 *thousand* 2 *hundred* 64, or 32 *hundred* 64. It means 3 *thousands*, 2 *hundreds*, 6 *tens*, and 4 *ones*.

3. The number 2400 is read 2 *thousand* 400, or 24 *hundred*. It means 2 *thousands*, 4 *hundreds*, 0 *tens*, and 0 *ones*. Read the number 5800.

4. Count by 1000's from 1000 to 9000.

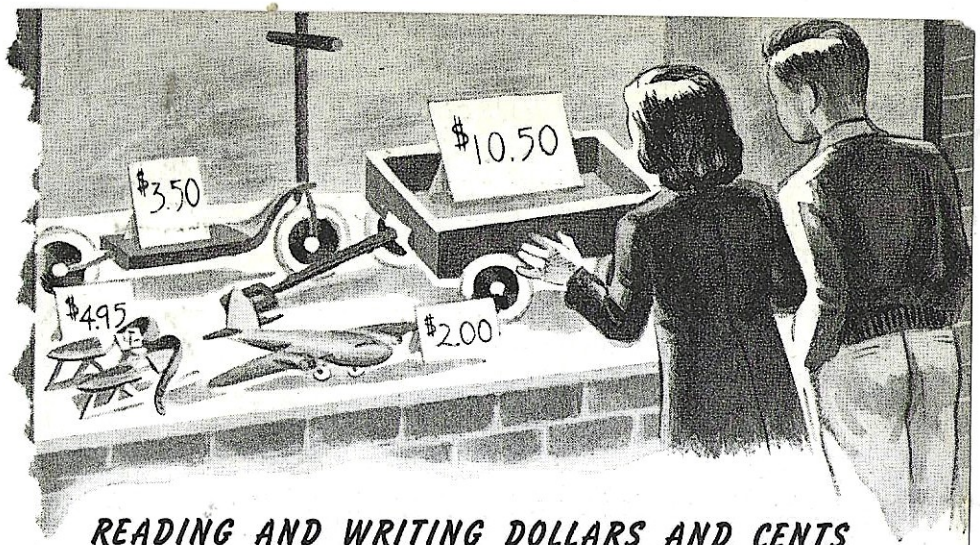
5. The next thousand after 9000 is 10,000. A comma is put after the thousands in a five-figure number like 10,000 to make the number easier to read. In a four-figure number the comma is often left out.

Read each number in two ways:

6.	4206	3416	1650	2903	5960	8025
7.	7510	9090	9999	8206	6523	4205
8.	[redacted]	6000	8030	4700	1900	9009

Write these numbers in figures:

9. Forty-one hundred — Five thousand
10. Nine thousand twelve — Nineteen hundred
11. Four thousand six hundred — Two thousand five



READING AND WRITING DOLLARS AND CENTS

1. $2.00 means 2 dollars. $3.50 means 3 dollars and 50 cents. The sign $ means *dollar* or *dollars* and is written *before* the number. The dot is written *between* the dollars and the cents and is called a *decimal point*.

2. 5 *dollars* and 20 *cents* is written $5.20.

3. 50 *cents* is written 50¢ or $0.50 or $.50.

4. 5 *cents* is written 5¢ or $0.05 or $.05.

5. Read the prices in the picture above.

Read these prices:

6.	$3.00	$1.50	$10.70	$.75	$8	18¢
7.	$1.90	$3.04	$20.00	$.01	$2	5¢

Write these using the sign $ and the decimal point:

8. 3 dollars and thirty-five cents
9. 2 dollars and twelve cents
10. 1 dollar and five cents
11. 35 cents — 7 cents

1. Ned has 146 stamps in his new stamp book. He has 138 more stamps to put in the book. How many stamps has he all together?

You add 146 and 138 as shown in *A*. The answer is 284. You get the last two figures of the answer, which are 84, the same way that you do when you add 46 and 38, as shown in *B*. How many stamps has Ned in all?

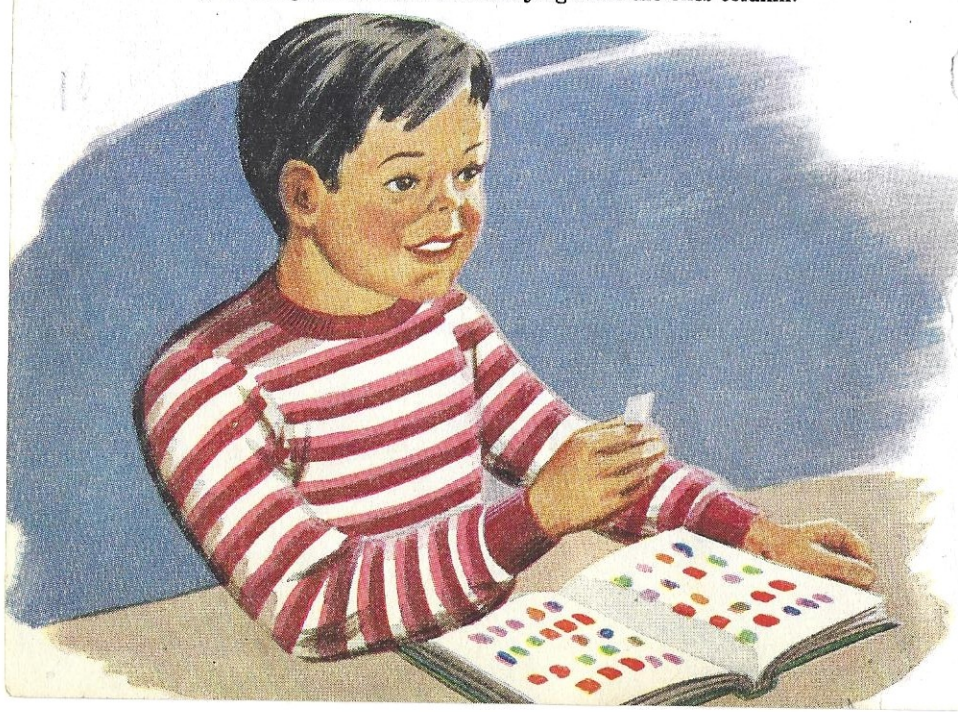
A	*B*
146	46
138	38
284	84

2. In the work in ex. 1 you got 14 when you added 8 and 6 in the ones column. When you carried 1 to the tens column, did the 1 stand for 1 ten or 1 hundred?

3. Bill had 218 stamps. He got 155 stamps for his birthday. How many stamps has Bill now?

4. Tom has 136 stamps in one book and 218 stamps in another book. How many stamps has Tom in all?

Adding three-figure numbers with carrying from the ones column.



Add up. Check each answer by adding down:

1.	123	715	148	427	336	459
	317	249	626	423	136	231
2.	526	137	839	545	233	608
	138	149	129	306	718	168
3.	961	118	309	412	347	425
	429	813	325	238	645	557
4.	706	223	534	549	654	309
	185	149	257	538	216	574
5.	568	669	145	102	127	258
	322	407	228	759	464	137
6.	704	127	429	357	718	626
	239	536	553	207	119	227
7.	206	818	316	554	227	406
	244	265	179	418	547	115
8.	349	317	427	305	169	748
	412	746	538	257	116	334
9.	105	307	334	125	106	735
	229	104	336	418	337	245
10.	148	227	508	414	259	681
	103	129	147	358	624	109
11.	224	637	269	108	419	125
	317	136	209	556	218	325

1. Mary collects pretty shells. She has 115 large shells and 205 small shells. How many shells has Mary all together?

2. Jane had 22 books. She got some more books on her birthday. Then she had 28 books in all. How many books did she get on her birthday?

3. Jack bought 5 large valentines and 7 small valentines. Then he made 9 more. How many valentines in all did Jack have?

4. Betty wants to send 20 valentines to her friends. She made 12 valentines and will buy the rest. How many valentines will Betty buy?

5. Tom's mother gave him 2 quarters. Is that enough money to buy a kite that costs 39¢? If so, how much will Tom have left?

6. Bob and Dick made tickets for the school puppet show. Bob made 115 tickets and Dick made 147. How many tickets did they make all together?

7. Bob says that 114 boys and 108 girls in our school bought tickets for the puppet show. How many children bought tickets?

8. Bob and Dick made 262 tickets in all. Only 222 tickets were sold. How many tickets were not sold?

9. Peggy went to the store for her mother. She bought milk for 17¢, a loaf of bread for 12¢, and oranges for 29¢. How much did Peggy spend?

10. Peggy had a half dollar, a dime, and a nickel to pay for the things she bought for her mother. Did she have enough money?

1. Joe's father drove his car 385 miles on Monday and 162 miles on Tuesday. How many miles did he drive both days?

You add 385 and 162 as shown in *A*. The answer is 547. You get the 7 of 547 by adding 5 and 2. You get the 54 of 547 the same way that you do when you add 38 and 16, as shown in *B*. How many miles did Joe's father drive in all?

A	*B*
385	38
162	16
547	54

2. In example *A* in ex. 1 you get 14 tens when you add 8 and 6 in the tens column. Show that 14 tens make 1 hundred and 4 tens. When you carried 1 from the tens column, did the 1 stand for 1 ten or 1 hundred?

3. Last summer Joe's father took him to Chicago. They rode 380 miles in the car and 125 miles on the train. How many miles in all did they ride?

4. Today 270 boys and 385 girls ate in the school lunch room. How many children ate there today?

5. Our postman makes two trips a day. This morning he delivered 352 letters. This afternoon he delivered 194 letters. How many letters did he deliver all together today?

6. On Saturday Jack helped his father in the store. They put 432 cans of fruit and 192 cans of soup on the shelves. How many cans was that?

7. Joe got two story books for his birthday. One book has 160 pages. The other one has 144 pages. How many pages are there in both books?

Adding three-figure numbers with carrying from the tens column.

PRACTICE IN CARRYING

Add these numbers and check each answer:

1.	653 182	341 168	486 323	392 492	590 343	245 106
2.	223 286	274 464	160 158	917 257	468 161	342 383
3.	163 643	588 240	684 95	252 356	178 505	472 434
4.	294 572	781 382	136 472	264 919	471 296	245 74
5.	373 255	712 97	988 806	593 434	257 718	191 253
6.	392 461	684 323	657 270	453 91	573 508	795 112
7.	187 172	956 808	232 595	541 374	760 296	908 717
8.	648 703	755 81	763 156	284 155	936 307	391 595
9.	137 107	441 195	249 432	520 185	507 168	161 366
10.	204 116	218 566	173 162	469 115	273 233	318 403
11.	383 472	190 236	265 253	480 360	494 191	283 326

A VALENTINE PARTY

1. The children are to have a valentine party. They have cut out 145 large red hearts and 278 small red hearts. How many hearts have they made?

To add these numbers you must carry twice.

Ones: Think "8, 13." Write 3 and carry 1 to the tens column. *Tens:* Think "1 (carried), 8, 12." Write 2 and carry 1 to the hundreds column. *Hundreds:* Think "1 (carried), 3, 4." Write 4. The sum is 423. The children have cut out 423 hearts. How do you check the answer? Check it.

$$\begin{array}{r} 145 \\ 278 \\ \hline 423 \end{array}$$

2. The girls will make cookies for the party. They will make 144 heart cookies and 88 star cookies. How many cookies will they make?

3. All the children in the third grades of our school are invited to the party. There will be 96 boys and 119 girls. How many children will there be in all?

Adding three-figure numbers with double carrying.

Add these numbers and check the work:

1.	236 676	468 473	573 377	667 267	178 446	359 478
2.	196 549	545 258	238 467	159 742	296 575	158 354
3.	538 188	424 289	288 265	487 333	274 357	129 173
4.	387 385	699 269	577 286	337 569	664 186	195 449
5.	349 485	196 358	281 479	715 187	182 258	149 576
6.	348 169	165 736	297 208	279 174	165 645	383 369
7.	655 169	326 277	264 558	279 369	428 382	456 274
8.	182 289	589 337	463 168	277 134	498 475	349 261
9.	189 543	285 226	197 135	476 158	378 522	197 614
10.	497 169	316 284	449 279	543 158	259 564	386 176
11.	152 148	386 447	125 375	297 657	245 278	196 309

1. Peter wants a pair of shoes that cost $3.49, a cap that costs $.95, and a sweater that costs $4.29. How much will all these things cost?

Write the numbers so that the decimal points are in a straight line under one another. Write the sign $ only before the first number.

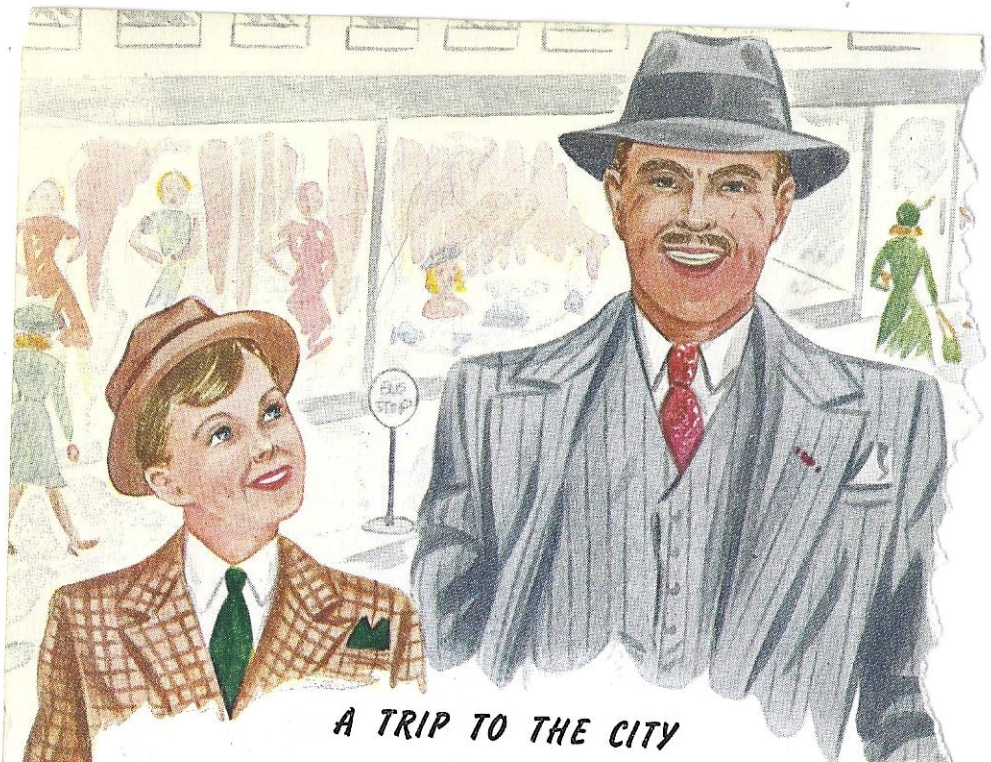
Add the dollars and cents just like other numbers and place the decimal point in the sum under the other decimal points. Check by adding down.

$3.49
.95
4.29
$8.73

How much will Peter have to pay for the things he wants?

Add up. Check the answers by adding down:

2.	$2.48 3.42	$7.05 1.68	$2.97 1.45	$3.84 2.97	$.52 .75
3.	$4.98 2.39	$7.10 1.95	$5.25 3.95	$3.08 4.95	$.72 .59
4.	$6.57 .80 .24	$1.96 .35 .70	$7.08 1.26 .94	$5.30 .57 2.58	$.86 .57 .19
5.	$2.91 .69 .66	$3.60 .86 1.39	$6.41 .94 2.03	$7.96 .34 1.54	$.83 .95 .19
6.	$4.30 2.19 1.78	$5.89 .73 2.67	$2.04 6.58 .18	$4.55 .48 4.72	$.46 .88 .37
7.	$2.28 3.17 3.45	$1.77 .84 .69	$3.29 .91 5.07	$1.81 1.08 .36	$.72 .65 .48



A TRIP TO THE CITY

1. Mr. Green took Dick to the city for his birthday. The bus ticket for Mr. Green cost $1.95 and for Dick, $1.09. How much did both tickets cost?

2. Dick wanted to visit the tallest building. Dick and his father paid $.75 each for tickets to the tower. How much did these tickets cost?

3. They went to the circus in the afternoon. Mr. Green's ticket cost $.95 and Dick's ticket cost $.65. How much did both tickets cost?

4. Dick spent $.75 for lunch, $.15 for ice cream, and $.20 for peanuts and popcorn. How much did Dick spend for all these things?

5. Mr. Green bought Dick a pair of shoes for $3.75 and a hat for $1.50. How much did these things cost?

Tell whether you add or subtract to get the answer:

1. You know how many cents you had this morning. Then you spent some money for a book. How do you find how many cents you have left?

2. You know how many cookies your mother baked and how many of them are left. How do you find how many cookies your family ate?

3. You know how many blue flowers, how many yellow flowers, and how many white flowers you picked this morning. How do you find how many flowers you picked all together?

4. You know how many cents you spent for a pencil, how many for a pad, and how many for a book. How do you find how many cents you spent in all?

5. You know how many cents Mary has and how many cents Tom has. How do you find how many more cents or less cents Mary has than Tom?

6. You know how many eggs your mother had and how many more eggs she bought. How do you find how many eggs she had then?

7. You know how many books Nancy has all together. You also know how many new books she has. How do you find how many old books Nancy has?

8. You know the price of the soup, the apple, the sandwich, and the ice cream you ate for lunch. How do you find how much your lunch cost?

9. You know the price of a sweater you want. You also know that the money you have is not enough to buy it. How do you find how much more money you need?

WATCH THE ZEROS

1. Mary bought a hat for $1.06 and a dress for $4.04. How much did both things cost?

Ones: Think "4 + 6 = 10." Write 0 and carry 1.
Tens: Think "1 (carried) + 0 + 0 = 1." Write 1.
Hundreds: Think "4 + 1 = 5." Write 5.
How much did Mary's things cost?

$1.06
4.04
$5.10

Add and check the work. Watch the zeros:

2.	$3.50 2.90	$6.47 1.03	$2.97 5.08	$1.07 4.95	$.76 .24
3.	$4.56 2.52	$1.80 4.32	$2.06 7.07	$4.96 3.70	$.15 .87
4.	$5.48 .92	$2.23 2.77	$ .98 7.05	$2.37 1.69	$.08 .04
5.	$3.00 4.70	$5.99 2.55	$4.47 4.62	$3.09 5.73	$.60 .90
6.	$1.09 1.58	$7.00 1.09	$2.80 .93	$ .25 4.75	$.06 .95
7.	$6.09 1.04	$2.64 4.06	$5.08 .07	$2.10 .90	$.41 .69

Zero difficulties in addition.

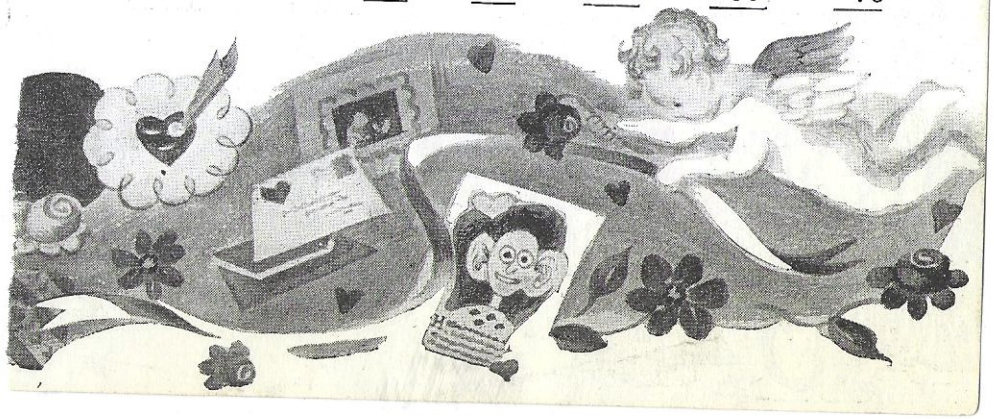
1. Mary wants to make 35 valentines to send to her friends. She has made 26 valentines. How many more does she need to make?

2. Tom earned 75¢ last week and 55¢ this week. How much more did Tom earn last week than this week?

3. There are 44 children in our room at school. Today only 29 children came to school. How many children did not come to school today?

Subtract. Check the answers by adding up:

4.	77 25	65 37	94 29	56 42	389 318	138 55	385 202
5.	60 18	97 96	71 26	86 38	966 505	594 120	134 92
6.	98 42	72 38	94 78	39 25	117 84	464 53	139 66
7.	56 29	66 34	84 25	45 16	468 466	177 83	278 227
8.	59 57	92 34	51 13	82 47	898 622	582 580	144 71
9.	51 37	86 41	63 28	75 49	105 73	159 86	160 70



SAVING MONEY

1. Jack is saving money to buy a large toy airplane. He saved 50¢ one week, 35¢ the next week, and 45¢ the third week. How much did Jack save in the three weeks?

$$\begin{array}{r} 50 \\ 35 \\ 45 \\ \hline 130 \end{array}$$

The answer to this problem is 130¢. You know that 100¢ make 1 dollar, so 130¢ is the same as 1 dollar and 30 cents, or $1.30.

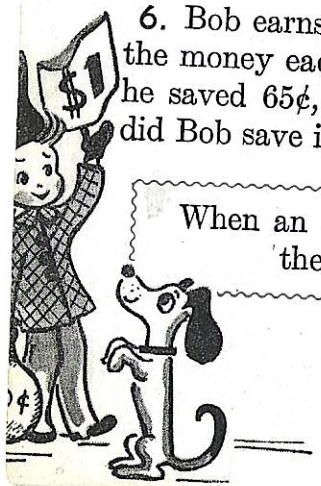
2. Alice put 85¢ in her bank last month. Then she put 75¢ more in her bank. How much in all did Alice have in her bank?

3. Tom earns money by running errands. He wants to save 45¢ a week so that some day he can buy a bicycle. He has saved 28¢ so far this week. How much more does he need to save this week?

4. The children are saving money for a present for Mother. Bill has saved 78¢, Dick has saved 85¢, and Jane has saved 92¢. How much have the children saved all together?

5. Sally saves all the money she gets so that she can go to camp next summer. This week she earned 75¢, Father gave her 50¢, and Aunt Betty gave her 45¢. How much money did Sally get this week?

6. Bob earns money selling papers. He saves part of the money each week. In the four weeks in February he saved 65¢, 45¢, 50¢, and 50¢. How much money did Bob save in February?



When an answer is larger than 100¢, change the answer to dollars and cents.

PINT AND QUART

1. To help Mother, Jack has just poured 2 glasses of milk from the *pint* bottle. It took the whole pint to fill the 2 glasses. How many glasses of milk make 1 pint?

2. Sally will get 4 glasses of milk from the *quart* bottle. It takes the whole quart to fill the 4 glasses. How many glasses of milk make 1 quart?

3. Fill a pint bottle with water. Pour the water into a quart bottle. Then pour another pint of water into the quart bottle. Does this fill the quart bottle? How many pints make 1 quart?

2 glasses = 1 pint (pt.)
2 pints = 1 quart (qt.)

4. Sally drinks 1 quart of milk a day. Does Sally drink 2 glasses or 4 glasses of milk a day?

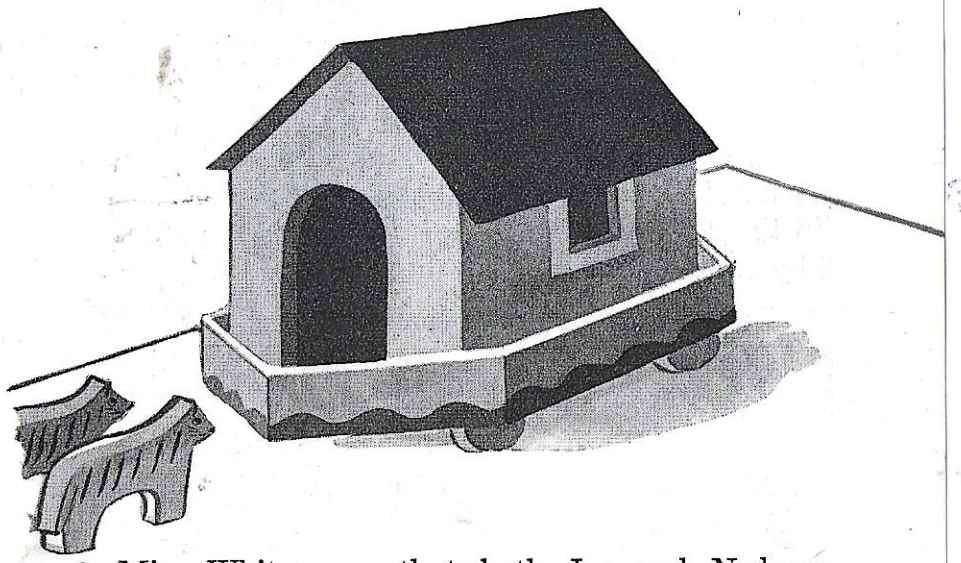
5. Jack drinks 2 pints of milk a day. How many glasses of milk does Jack drink in a day?

ANIMALS FOR THE ARK

1. Joe is making animals for an ark for little Tom. He makes the animals in pairs. There are 2 animals in each pair. If he makes 5 pairs of animals, how many animals will he have?

2. Joe says that he can find how many animals there are in 5 pairs by counting by 2's like this: 2, 4, 6, 8, 10. Ned says he can get the answer by adding five 2's, as shown at the right. How many are five 2's?

$$\begin{array}{r} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ \hline 10 \end{array}$$



3. Miss White says that both Joe and Ned are right. She says that another way to get the answer is to remember that five 2's are 10. When you do this you are multiplying 2 by 5.

4. A short way to write "five 2's are 10" is like this: $5 \times 2 = 10$. The sign $\times$ means *times*. You read this "5 *times* 2 *are* 10."

5. How many animals are there in 4 pairs? How many are four 2's? How many are 4×2? How many animals are there in 6 pairs? How many are 6×2? How many are 7×2? 8×2? 9×2?

$$\begin{array}{r} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ \underline{2} \end{array} \qquad \begin{array}{r} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ \underline{2} \end{array}$$

Tell the answers:

6. $6 \times 2 = \ldots$	$9 \times 2 = \ldots$	seven 2's are ...
7. $4 \times 2 = \ldots$	$3 \times 2 = \ldots$	two 2's are ...
8. $5 \times 2 = \ldots$	$8 \times 2 = \ldots$	nine 2's are ...
9. $7 \times 2 = \ldots$	$2 \times 2 = \ldots$	six 2's are ...

1. A short way to write $6 \times 2 = 12$ is to write 6 under 2 as shown at the right. This is read "6 times 2 are 12." Another way to say that "6 times 2 are 12" is to say that you *multiply* 2 by 6. The answer 12 is called the *product*.

$$\begin{array}{r} 2 \\ 6 \\ \hline 12 \end{array}$$

2. Learn these multiplication facts:

$$\begin{array}{r} 2 \\ 1 \\ \hline 2 \end{array} \quad \begin{array}{r} 2 \\ 2 \\ \hline 4 \end{array} \quad \begin{array}{r} 2 \\ 3 \\ \hline 6 \end{array} \quad \begin{array}{r} 2 \\ 4 \\ \hline 8 \end{array} \quad \begin{array}{r} 2 \\ 5 \\ \hline 10 \end{array} \quad \begin{array}{r} 2 \\ 6 \\ \hline 12 \end{array} \quad \begin{array}{r} 2 \\ 7 \\ \hline 14 \end{array} \quad \begin{array}{r} 2 \\ 8 \\ \hline 16 \end{array} \quad \begin{array}{r} 2 \\ 9 \\ \hline 18 \end{array}$$

3. Alice can buy pencils for 2¢ each. How much must she pay for 4 pencils? for 7 pencils? for 6 pencils? for 9 pencils? for 5 pencils?

4. Jack buys marbles at 2¢ each. How much does he pay for 6 marbles? for 9 marbles? for 8 marbles? for 5 marbles? for 7 marbles?

5. Multiply these numbers:

$$\begin{array}{r} 2 \\ 4 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 7 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 2 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 9 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 5 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 1 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 8 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 3 \\ \hline \end{array} \quad \begin{array}{r} 2 \\ 6 \\ \hline \end{array}$$

6. Sometimes you write the multiplication facts in a table like the one below. Tell the answers:

$1 \times 2 = \ldots$	$4 \times 2 = \ldots$	$7 \times 2 = \ldots$
$2 \times 2 = \ldots$	$5 \times 2 = \ldots$	$8 \times 2 = \ldots$
$3 \times 2 = \ldots$	$6 \times 2 = \ldots$	$9 \times 2 = \ldots$

1. The girls in our class are dressing dolls. They are making 2 dresses for each doll. How many dresses do they need for 6 dolls? How many are 6×2 dresses? How many are 6×2?

2. Last week the girls made 2 dresses for each of 3 dolls. How many dresses did they make?

3. Each dress has 2 buttons on it. How many buttons will they need for 4 dresses? for 8 dresses? for 9 dresses? for 5 dresses?

4. Each doll is to have 2 hats. How many hats will they need for 6 dolls? for 5 dolls? for 7 dolls? for 4 dolls? for 9 dolls?

5. It takes Jane 2 hours to make a doll's hat. How many hours will it take her to make 2 hats?

6. Mary saw a doll in the store for $2. How much would 3 dolls cost at $2 each?

7. Find the cost of 8 baby dolls at $2 each.

1. On pages 36 and 37 you learned these addition facts. They are called *doubles:*

7	6	1	5	4	2	8	9	3
+ 7	+ 6	+ 1	+ 5	+ 4	+ 2	+ 8	+ 9	+ 3
14	12	2	10	8	4	16	18	6

The first fact tells you that two 7's are 14. Another way to write "two 7's are 14" is like this: $2 \times 7 = 14$. The second fact tells you that two 6's are 12. This may be written $2 \times 6 = 12$. You see that the doubles in addition show you how to make some new multiplication facts.

Say the answers to these multiplication facts. If you do not know an answer, look at the facts in ex. 1:

2. $2 \times 7 =$ *14.* $2 \times 6 = \ldots$ $2 \times 1 = \ldots$
3. $2 \times 5 = \ldots$ $2 \times 4 = \ldots$ $2 \times 2 = \ldots$
4. $2 \times 8 = \ldots$ $2 \times 9 = \ldots$ $2 \times 3 = \ldots$

5. Learn these new multiplication facts:

1	2	3	4	5	6	7	8	9
2	2	2	2	2	2	2	2	2
2	4	6	8	10	12	14	16	18

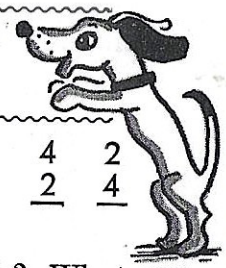
6. Find the cost of 2 apples at 5¢ each.
7. Find the cost of 2 pencils at 3¢ each.
8. Find the cost of 2 dresses at $6 each.
9. Multiply these numbers:

4	9	1	5	8	3	7	2	6
2	2	2	2	2	2	2	2	2

1. The multiplication facts come in pairs like shoes. 6×2 and 2×6 make a pair of multiplication facts. The numbers in 6×2 are the same as those in 2×6 but they are *turned around.* 6×2 and 2×6 both have the same answer, which is 12.

2	6
6	2
12	12

If two numbers are turned around, their product is still the same.



2. You see that 2×4 and 4×2 also make a pair of multiplication facts. Do these facts both have the same answer?

4	2
2	4

3. What fact goes with 2×5 to make a pair? What is the answer to both facts?

4. Betty forgets the answer to 7×2. She turns the numbers around and gets 2×7. Betty remembers that $2 \times 7 = 14$. This shows her that $7 \times 2 = 14$.

5. Tom forgets the answer to 9×2. He turns the numbers around and gets 2×9. What is the answer to 2×9? Then what is the answer to 9×2?

6. $2 \times 8 = 16$; then how many are 8×2?

What numbers should be put in the spaces?

7. $3 \times 2 = 2 \times \ldots$ $5 \times 2 = 2 \times \ldots$ $2 \times 8 = 8 \times \ldots$
8. $7 \times 2 = 2 \times \ldots$ $2 \times 1 = 1 \times \ldots$ $6 \times 2 = 2 \times \ldots$

If you forget the answer to a multiplication fact, turn the numbers around. Then try to multiply them.

1. Nancy eats 2 oranges every day. How many oranges does she eat in 6 days?

2. There are 3 people in Nancy's family. If each one eats 2 oranges every day, how many oranges in all do they eat in a day?

3. Tom's brother works 2 hours each day in the store. How many hours does he work in 5 days?

4. Find how much you pay for these things:

2 pads at 5¢ each	2 apples at 4¢ each
2 pencils at 3¢ each	2 pears at 6¢ each
2 rulers at 9¢ each	2 oranges at 7¢ each
2 stamps at 2¢ each	2 balloons at 8¢ each

Multiply these numbers:

5.	2	2	4	2	9	2	6	2	2
	7	1	2	2	2	3	2	8	5
6.	2	7	3	8	1	5	2	2	2
	4	2	2	2	2	2	2	9	6

7. In ex. 5 and 6, multiply the numbers again and add 1 to each answer. In ex. 5 the first answer is 15.

Give the answer to each:

8. $2 \times 4 =$	$2 \times 9 =$	$2 \times 7 =$
9. $2 \times 1 =$	$2 \times 5 =$	$2 \times 3 =$
10. $2 \times 6 =$	$2 \times 8 =$	$2 \times 2 =$

11. In ex. 8 to 10 turn the numbers around in each fact. Then give the answers again.

EGGS FOR EASTER

1. Ned and Alice wanted to color some eggs for Easter. They bought 2 boxes of eggs. Each box had 1 dozen eggs in it. 12 eggs make 1 dozen. How many eggs did Ned and Alice buy?

You can find the number of eggs by adding 12 and 12, as shown here. Another way is to multiply 12 by 2, as shown below:

$$\begin{array}{r} 12 \\ \underline{12} \\ 24 \end{array}$$

Remember that 12 means 1 ten and 2 ones.

Think "2 × 2 ones = 4 ones." Write 4 in the ones place. Think "2 × 1 ten = 2 tens." Write 2 in the tens place. The answer is 24. The children bought 24 eggs.

$$\begin{array}{r} 12 \\ \underline{2} \\ 24 \end{array}$$

To check, go over the work again and see if you get the same answer. If you do, you may call the work right.

2. Multiply. Check the work by going over it again:

43	13	32	44	34	324	134
2	2	2	2	2	2	2

Multiplying by 2, no carrying.

1. Jack's father sends flowers to the city. Jack helps him pack the boxes. He puts 72 flowers in the large boxes. How many flowers does he put in 2 boxes?

You must multiply 72 by 2. Remember that 72 means 7 tens and 2 ones.

Think "2 × 2 ones = 4 ones." Write 4 under 2.
Think "2 × 7 tens = 14 tens (1 hundred and 4 tens)."
Write 14 at the left of 4. The answer is 144.
When you understand the work, do it like this:
Think "2 × 2 = 4." Write 4.
Think "2 × 7 = 14." Write 14.
Jack puts 144 flowers in 2 boxes.

$$\begin{array}{r} 72 \\ 2 \\ \hline 144 \end{array}$$

2. Jack puts 54 flowers in the smaller boxes. How many flowers does he need to fill 2 of these boxes?

3. How many flowers will it take to fill 2 boxes if each box holds 24 flowers?

Multiply. Check the work by going over it again:

4.	12	53	34	82	22	123	341
	2	2	2	2	2	2	2
5.	51	73	61	41	93	144	432
	2	2	2	2	2	2	2
6.	83	11	92	63	42	322	243
	2	2	2	2	2	2	2
7.	52	84	74	94	81	431	141
	2	2	2	2	2	2	2
8.	64	71	32	43	52	142	412
	2	2	2	2	2	2	2

1. Mary bought 2 packages of yellow paper to make flowers. There were 36 sheets of paper in each package. How many sheets of paper did she buy?

Think, "2 × 6 ones = 12 ones." 12 ones make 1 ten and 2 ones. Write 2 in the ones place and remember the 1 ten, which you will carry in the next step.
Then think, "2 × 3 tens = 6 tens." Add 6 tens and the 1 ten that you are carrying, which makes 7 tens. Write 7 in tens place. The answer is 72.

$$\begin{array}{r} 36 \\ 2 \\ \hline 72 \end{array}$$

After you understand the work, do it like this:
Think, "2 × 6 = 12." Write 2 and carry 1.
Then think, "2 × 3 = 6. 6 + 1 (carried) = 7." Write 7.
Mary bought 72 sheets of yellow paper.

Multiply. Check the work by going over it again:

2.	49	25	96	58	427	218
	2	2	2	2	2	2
3.	68	55	77	95	339	246
	2	2	2	2	2	2
4.	57	86	56	79	326	137
	2	2	2	2	2	2
5.	75	87	65	88	236	419
	2	2	2	2	2	2
6.	66	38	45	59	247	327
	2	2	2	2	2	2
7.	85	89	78	97	429	146
	2	2	2	2	2	2

Multiplication with carrying from the ones column.

PAINTING TOYS

1. Ann has painted some blocks to give her little brother on his birthday. She has painted 2 blocks red, 2 blue, 2 green, 2 yellow, 2 orange, and 2 white. How many blocks are there? Count the blocks by 2's.

2. In Jane's doll house she has 6 chairs, 2 beds, and 3 tables that she has painted. How many things has Jane painted?

3. Tom has painted 2 toy airplanes and 3 toy boats. How many toys has Tom painted?

4. Jim has 11 toy animals. He has painted 5 of them. How many more has he to paint?

5. Jim bought 2 small cans of paint. He paid 27¢ for each can. How much did he pay for both?

ON THE TRAIN

1. Betty and Bob rode on a train when they went to see their uncle. They bought 2 tickets and paid $2.18 for each one. How much did both tickets cost?

Dollars and cents are multiplied like other numbers. After multiplying put a dot before the last two figures in the answer, to separate the dollars from the cents. The dot is called *a decimal point.* The children paid $4.36 for the tickets.

$$\begin{array}{r} \$2.18 \\ 2 \\ \hline \$4.36 \end{array}$$

2. The children bought their lunch on the train. Each lunch cost 75¢. How much did 2 lunches cost?

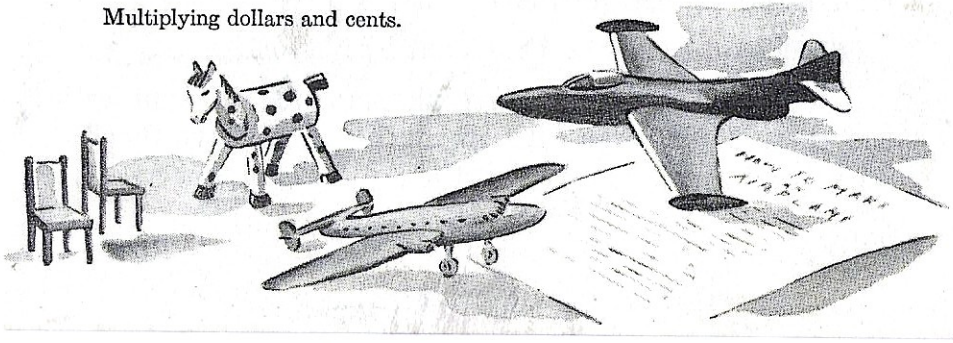
First write 75¢ as $.75. Then multiply. Write the decimal point before the last two figures in the answer, to separate the dollars from the cents. You see that the lunches cost $1.50.

$$\begin{array}{r} \$.75 \\ 2 \\ \hline \$1.50 \end{array}$$

Multiply. Check the work by going over it again:

3.	$3.45 × 2	$1.27 × 2	$4.18 × 2	$.67 × 2	$.99 × 2
4.	$2.23 × 2	$3.19 × 2	$2.25 × 2	$.98 × 2	$.22 × 9
5.	$3.18 × 2	$2.22 × 4	$3.44 × 2	$.26 × 2	$.48 × 2
6.	$4.17 × 2	$4.41 × 2	$2.14 × 2	$.22 × 7	$.69 × 2

Multiplying dollars and cents.



Tell the numbers to put in the spaces:

1. 1 quart = . . . pints 1 dozen = . . . things
2. 1 foot = . . . inches 1 quarter = . . . nickels
3. 1 dime = . . . cents 1 dollar = . . . cents
4. 3 quarts = . . . pints 2 dimes = . . . cents

Read these telephone numbers and street addresses:

5. Main 6263 1584 Main Street
6. South 4709 6813 Park Street

7. Read these prices: $5.75, $8.40, $2.09, $9.00.

8. What is the cost of two 3-cent stamps?

9. Say the answers. Watch the signs:

10	4	9	13	5	7	11	12
− 5	+ 8	+ 7	− 5	+ 9	+ 4	− 4	− 3

Multiply these numbers:

10.	9	2	4	3	2	2	2	7	2
	2	6	2	2	5	8	2	2	1
11.	1	2	8	5	2	6	2	2	4
	2	4	2	2	7	2	3	9	2

12. Do ex. 10 and 11 again and add 1 to each answer. In ex. 10 the first answer is 19.

13. Count by 2's to 50. Count by 5's to 100.

14. Tom has 2¢ in one pocket and 9¢ in another pocket. If he earns 5¢, how much will he have then?

Add up. Check the work by adding down:

1.	46	87	94	93	97	46	48
	76	98	67	57	40	66	99
	19	23	55	38	69	27	27
2.	609	517	109	265	463	250	
	208	184	675	638	486	473	
3.	425	603	103	132	375	384	
	375	102	807	496	369	288	
4.	228	178	582	505	119	274	
	233	127	279	176	326	256	
5.	481	388	209	106	213	243	
	347	125	157	108	324	157	

Subtract and check the work:

6.	77	62	379	458	978	875
	48	13	134	350	217	670
7.	64	80	295	989	639	864
	29	24	52	148	632	201
8.	74	73	499	639	186	149
	56	15	460	632	91	77
9.	66	81	137	107	564	175
	37	42	74	80	512	84
10.	52	64	104	824	150	588
	26	38	50	821	90	254

USING 1's IN MULTIPLICATION

1. Jane bought 4 lollipops at 1¢ each. How much did she pay for them? How many are 4×1?

2. Ann bought 1 big lollipop for 4¢. How much is 1×4? Does $1 \times 4 = 4 \times 1$?

3. Tom bought 3 lollipops at 1¢ each. How much did they cost? How many are 3×1? How many are 1×3?

4. Jim bought 5 gumdrops at 1¢ each. What did he pay for them? How many are 5×1? 1×5?

5. How many are 6×1? How many are 1×6? Does $6 \times 1 = 1 \times 6$?

6. At 1¢ each, what would you pay for 8 stamps? You know that $8 \times 1 = 8$. How many are 1×8?

7. Here are the multiplication facts with 1's. They are easy to remember. Learn them:

1	2	1	3	1	4	1	5	1	
2	1	3	1	4	1	5	1	1	
2	2	3	3	4	4	5	5	1	
1	6	1	7	1	8	1	9		
6	1	7	1	8	1	9	1		
6	6	7	7	8	8	9	9		

Tell the answers:

8. 8×1 $\quad 1 \times 9$ $\quad 4 \times 1$ $\quad 6 \times 1$ $\quad 1 \times 1$

9. 1×7 $\quad 5 \times 1$ $\quad 1 \times 3$ $\quad 9 \times 1$ $\quad 2 \times 1$

10. 1×6 $\quad 3 \times 1$ $\quad 1 \times 8$ $\quad 1 \times 2$ $\quad 1 \times 4$

Seventeen multiplication facts with the 1's.

ZERO FACTS IN MULTIPLICATION

1. In a game of beanbag if your first bag falls on the floor, you get 0, or zero. You get 0 again if the second bag falls on the floor. Your score is $0 + 0$, which equals 0. This shows that two 0's make 0. Another way to say this is: $2 \times 0 = 0$.

$$\begin{array}{r} 0 \\ 2 \\ \hline 0 \end{array}$$

2. If you throw 3 beanbags and they all fall on the floor, your score is 0 because three 0's make 0. This shows that $3 \times 0 = 0$.

3. How many are 8×0? 5×0? 1×0? 0×0? How many are 6×0? 9×0?

Any number $\times$ 0 = 0.

4. You know that $4 \times 0 = 0$. If you turn the numbers around, the answer is still 0. This shows that $0 \times 4 = 0$.

$$\begin{array}{r} 0 \\ 4 \\ \hline 0 \end{array} \qquad \begin{array}{r} 4 \\ 0 \\ \hline 0 \end{array}$$

5. How many are 0×6? 0×9? 0×1? 0×5?

0 $\times$ any number = 0.

6. All these multiplication facts have zeros. It is easy to remember them:

0	1	0	2	0	3	0	4	0	5
1	0	2	0	3	0	4	0	5	0
0	0	0	0	0	0	0	0	0	0
0	6	0	7	0	8	0	9	0	
6	0	7	0	8	0	9	0	0	
0	0	0	0	0	0	0	0	0	

1. Jack sold 105 papers each week for 2 weeks. How many papers did he sell in 2 weeks?

Multiply 105 by 2 in this way:
Think "2 × 5 = 10." Write 0 and remember the 1 to be carried.
Think "2 × 0 = 0. 0 + 1 (carried) = 1." Write 1.
Think "2 × 1 = 2." Write 2. The answer is 210.
Jack sold 210 papers in 2 weeks.

$$\begin{array}{r} 105 \\ \underline{2} \\ 210 \end{array}$$

2. Jim sold 100 papers each week for 2 weeks. How many papers did he sell in 2 weeks?

3. Tom sold 21 papers a day for 5 days. How many papers did he sell in 5 days?

Multiply. Check the work by going over it again:

4.	80	21	10	19	102	107	100
	2	9	2	2	9	2	6
5.	67	12	90	20	212	408	110
	2	6	2	5	3	2	1
6.	22	60	78	89	321	101	316
	7	2	1	2	2	8	2
7.	51	12	30	11	210	410	102
	2	8	2	4	3	2	8
8.	20	81	11	96	200	217	309
	4	2	8	2	4	2	2
9.	75	21	80	58	245	112	102
	1	3	2	2	2	5	7

1. Bob is making plans for his garden. He wants 2 rows of tomato plants with 16 plants in each row. How many tomato plants does Bob need?

2. Bill wants 3 rows of cabbage plants with 12 plants in each row. How many plants will he need?

3. For our school party we bought 5 boxes of paper cups. There were 12 cups in each box. How many paper cups did we have?

4. We bought 2 boxes of paper napkins with 36 napkins in a box. How many napkins did we have?

> If you know the number of things in one row or box, you multiply to find the number of things in two or more rows or boxes of the same kind.

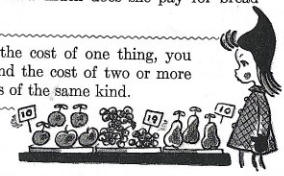
5. Milk costs 18¢ a quart in the city where Mary lives. How much must she pay for 2 quarts?

6. Peggy spent 22¢ for lunch each day last week. How much did she spend for lunch in 5 days?

7. Jane bought 2 story books at 47¢ each. How much did Jane pay for the books?

8. A loaf of bread costs 12¢. Mary's mother buys 4 loaves a week. How much does she pay for bread each week?

> If you know the cost of one thing, you multiply to find the cost of two or more things of the same kind.



1. Alice paid $1.75 for a bird book and $.65 for a story book. How much in all did Alice pay for these two books?

2. Bill bought 2 story books that cost $.85 each. How much did Bill spend for both books?

3. Betty saw a book about animals for 75¢. She wanted to buy it but she had only 45¢. How much more money did Betty need?

4. Jack bought 2 stamp books. Each book will hold 238 stamps. How many stamps will Jack have when he fills both books?

5. Jim paid 95¢ for two books. One of them cost 58¢. How much did the other cost?

6. Nancy saved 35¢. She earned 25¢ helping Mother. Did she have enough to buy an 85-cent story book?

1. Mary had 50 beads on a string. After the string broke Mary found only 39 beads. How many beads did Mary lose?

2. There are 35 marbles in a bag. Jack buys 2 bags of marbles. How many marbles are there in 2 bags?

3. Jack and Jane together sold 56 tickets to the play. Jack sold 32 of the tickets. How many did Jane sell?

4. One day Father drove his car 125 miles in the morning and 95 miles in the afternoon. How many miles did Father drive that day?

5. How many more miles did Father drive in the morning than in the afternoon?

6. Uncle Dick bought 2 books for Alice. He paid $1.29 for each book. How much did Uncle Dick pay for the 2 books?

7. Tom went to the circus. He paid 35¢ for a ticket, 15¢ for ice cream, and 10¢ for peanuts. How much did Tom pay in all?

8. This morning one bus brought 45 children to school. The other bus brought 39 children. How many children did both busses bring?

Poor: 0 to 4 right.
Fair: 5 right.
Good: 6 or 7 right.
Excellent: 8 right.

CHAPTER REVIEW

1. Write 15 cents in three different ways.

2. Use the sign $ and a decimal point to write each of these amounts:

2 dollars and five cents	18 dollars
5 dollars and no cents	78 cents
1 dollar and ten cents	125 dollars

3. How many glasses can you fill with 1 quart of milk? with 1 pint of milk?

4. How many rolls are there in 2 dozen?

5. Count by 2's to 40. Count by 10's to 100.

Tell what numbers should be put in the spaces. Also give the answers:

6. $6\times2=2\times\ldots$ $\quad 0\times3=3\times\ldots$ $\quad 2\times3=3\times\ldots$

7. $1\times4=4\times\ldots$ $\quad 2\times8=8\times\ldots$ $\quad 5\times1=1\times\ldots$

Add these numbers and check:

8.	246	408	165	239	503	425
	357	202	306	168	307	367
9.	465	587	609	153	346	275
	248	135	237	462	403	189

Multiply. Check the work by going over it again:

10.	12	20	35	102	200	425
	7	6	2	6	3	2
11.	74	91	22	120	317	112
	2	2	8	4	2	5
12.	86	20	47	122	732	121
	2	8	2	3	2	4

If you miss more than one example in any row, turn to the Practice Pages for that row.

Add these numbers and check the work:

					PRACTICE PAGES
1.	$2.56	$.98	$1.29	$4.53	161
	.48	3.67	.23	.98	
	.09	.43	1.76	2.06	
2.	$2.40	$3.49	$1.07	$5.80	164
	1.80	1.03	3.03	.74	
3.	269	445	256	534	413	155
	514	607	427	418	269	
4.	562	381	662	373	754	158
	382	327	254	185	172	
5.	479	363	177	183	248	160
	394	278	467	329	365	

Multiply and check the work:

6.	42	23	71	641	832	176
	2	2	2	2	2	
7.	28	45	95	37	56	177
	2	2	2	2	2	
8.	$.59	$.22	$.46	$.12	$.35	179
	2	8	2	9	2	
9.	20	12	60	211	112	184
	5	8	2	3	7	

Diagnostic test.

TO BE CONTINUED IN
SECOND HALF